

SERVICE MANUAL

3CD CHANGER HI-FI SYSTEM

MODEL: VTC-CD 4302

universum.

CONTENTS

MAIN SYSTEM

1. SERVICING PRECAUTIONS	3
2. ESD PRECAUTIONS	5
3. SPECIFICATIONS	6
4. ADJUSTMENTS	8
5. TROUBLESHOOTING	10
6. WAVEFORMS OF MAJOR CHECK POINT	15
7. BLOCK DIAGRAM.....	17
8. SCHEMATIC DIAGRAMS	18
9. WIRING DIAGRAM	23
10. PCB LAYOUTS	24
11. INTERNAL BLOCK DIAGRAM OF ICs	28
12. REPAIRS REGARDING CD MECHANISM	39
13. EXPLODED VIEW/PARTS LIST	40
14. REPLACEMENT PARTS LIST	44

SPEAKER SYSTEM

1. SPECIFICATION	47
2. SCHEMATIC DIAGRAM	47
3. EXPLODED VIEW/PARTS LIST	48

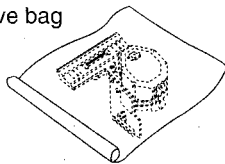
SERVICING PRECAUTIONS

NOTES REGARDING HANDLING OF THE PICK-UP

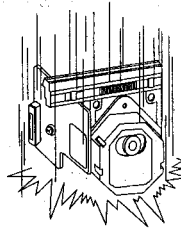
1. Notes for transport and storage

- 1) The pick-up should always be left in its conductive bag until immediately prior to use.
- 2) The pick-up should never be subjected to external pressure or impact.

Storage in conductive bag

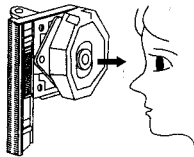


Drop impact



2. Repair notes

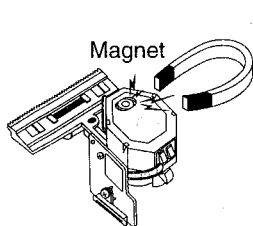
- 1) The pick-up incorporates a strong magnet, and so should never be brought close to magnetic materials.
- 2) The pick-up should always be handled correctly and carefully, taking care to avoid external pressure and impact. If it is subjected to strong pressure or impact, the result may be an operational malfunction and/or damage to the printed-circuit board.
- 3) Each and every pick-up is already individually adjusted to a high degree of precision, and for that reason the adjustment point and installation screws should absolutely never be touched.
- 4) Laser beams may damage the eyes!
Absolutely never permit laser beams to enter the eyes!
Also NEVER switch ON the power to the laser output part (lens, etc.) of the pick-up if it is damaged.



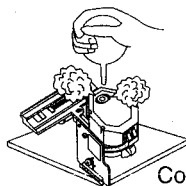
NEVER look directly at the laser beam, and don't let contact fingers or other exposed skin.

5) Cleaning the lens surface

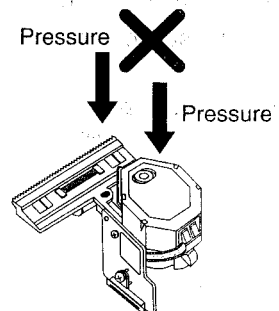
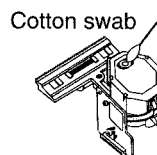
If there is dust on the lens surface, the dust should be cleaned away by using an air bush (such as used for camera lens). The lens is held by a delicate spring. When cleaning the lens surface, therefore, a cotton swab should be used, taking care not to distort this.



How to hold the pick-up



Conductive Sheet



6) Never attempt to disassemble the pick-up.

Spring by excess pressure. If the lens is extremely dirty, apply isopropyl alcohol to the cotton swab. (Do not use any other liquid cleaners, because they will damage the lens.) Take care not to use too much of this alcohol on the swab, and do not allow the alcohol to get inside the pick-up.

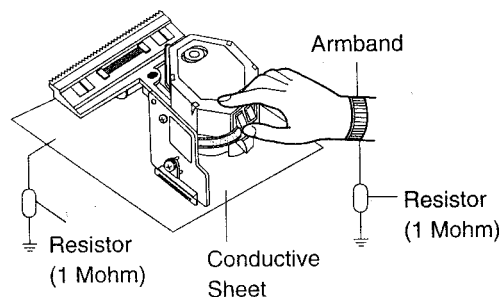
NOTES REGARDING COMPACT DISC PLAYER REPAIRS

1. Preparations

- 1) Compact disc players incorporate a great many ICs as well as the pick-up (laser diode). These components are sensitive to, and easily affected by, static electricity. If such static electricity is high voltage, components can be damaged, and for that reason components should be handled with care.
- 2) The pick-up is composed of many optical components and other high-precision components. Care must be taken, therefore, to avoid repair or storage where the temperature or humidity is high, where strong magnetism is present, or where there is excessive dust.

2. Notes for repair

- 1) Before replacing a component part, first disconnect the power supply lead wire from the unit.
- 2) All equipment, measuring instruments and tools must be grounded.
- 3) The workbench should be covered with a conductive sheet and grounded.
When removing the laser pick-up from its conductive bag, do not place the pick-up on the bag. (This is because there is the possibility of damage by static electricity.)
- 4) To prevent AC leakage, the metal part of the soldering iron should be grounded.
- 5) Workers should be grounded by an armband (1MΩ).
- 6) Care should be taken not to permit the laser pick-up to come in contact with clothing, in order to prevent static electricity changes in the clothing to escape from the armband.
- 7) The laser beam from the pick-up should NEVER be directly facing the eyes or bare skin.



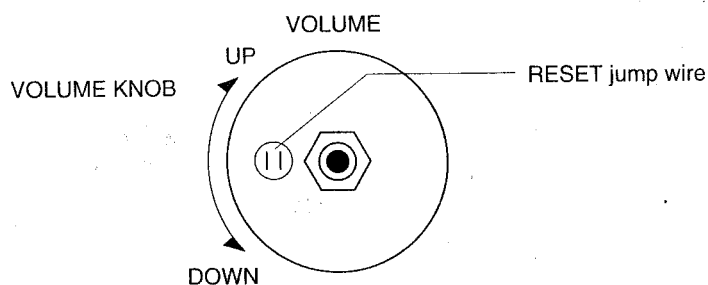
CLEARING MALFUNCTION

You can reset your unit to initial status if malfunction occur(button malfunction, display, etc.).

Using a pointed good conductor(such as driver), simply short the RESET jump wire on the inside of the volume knob for more than 3 seconds.

If you reset your unit, you must reenter all its settings(stations, clock, timer)

- NOTE:** 1. To operate the RESET jump wire, pull the volume rotary knob and release it.
2. If you wish to operate the RESET jump wire, it is necessary to unplug the power cord.



ESD PRECAUTIONS

Electrostatically Sensitive Devices (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive Devices (ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ESD devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESD devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.
6. Do not remove a replacement ESD device from its protective package until immediately before you are ready to install it. (Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).
7. Immediately before removing the protective material from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION : BE SURE NO POWER IS APPLIED TO THE CHASSIS OR CIRCUIT, AND OBSERVE ALL OTHER SAFETY PRECAUTIONS.

8. Minimize bodily motions when handling unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).

SPECIFICATIONS

1. AMP SECTION

	Main	Super Worfer
① Power Output (6 Ω , 2 channel, T.H.D. 10%)	30W+30W	120W+120W
② T.H.D.	0.2%	1.0%
③ Frequency Response (-3dB down)	200Hz~25kHz	45Hz~120Hz
④ Signal-to-noise Ratio	83dB	75dB
⑤ Input Sensitivity AUX	400 $\pm$ 50mV	300 $\pm$ 70mV
⑥ Channel Difference 1kHz	2dB	

2. TUNER SECTION

1) FM

① Frequency Range	87.5MHz~108MHz
② Intermediate Frequency	10.7MHz
③ Sensitivity (70MHz/78.6MHz/83.0MHz/86.6MHz/90MHz/98MHz)	12dB
④ Signal-to-noise Ratio 98.1MHz(Mono/Stereo)	61dB/58dB
⑤ Image Rejection 106.1MHz	35dB
⑥ IF Rejection 90.1MHz	65dB
⑦ Distortion 98.1MHz(Mono/Stereo)	1.2/1.2%
⑧ Frequency Response (-3dB)	200Hz~12.5kHz
⑨ Stereo Separation (100Hz/1kHz/10kHz)	25dB

2) AM(MW)

① Frequency Range	522kHz~1611kHz
② Intermediate Frequency	450kHz
③ Usable Sensitivity	55dB
④ Image Rejection (1404kHz)	25dB
⑤ IF Rejection (603kHz)	40dB
⑥ Selectivity (1008kHz)	23dB
⑦ Signal-to-noise Ratio (1008kHz)	35dB
⑧ Distortion (1008kHz)	1.5%
⑨ Frequency Response (1008kHz)	200Hz~2000Hz

3. TAPE DECK SECTION

① Tape Speed (MTT-111) / Normal Speed	3($\pm 1.5\%$)kHz
② Wow Flutter (MTT-111)	0.25%
③ Fast Forward and Rewind Time (C-60)	130sec
④ Frequency Response (6dB range)	250Hz~8kHz
⑤ Signal-to-noise Ratio (Playback/Record)	43dB/43dB
⑥ Distortion (Playback/Record)	3% / 4%
⑦ Crosstalk (Playback: 1kHz)	55dB
⑧ Channel Separation (Playback: 1kHz)	50dB
⑨ Erase Ratio	55dB

4. COMPACT DISC PLAYER SECTION

① Frequency Response (200Hz-18kHz)	+0.5/-3.0dB
② Signal-to-noise Ratio (1kHz)	70dB
③ Dynamic Range (1kHz)	70dB
④ T.H.D. (1kHz)	0.2%
⑤ Separation (100Hz/1kHz/10kHz)	45dB/45dB/40dB
⑥ Access Time Short / Long	2sec/5sec

5. GENERAL

① Power requirement	Refer to the back panel of unit
② Power consumption	240W
③ Dimension (W x H x D)	273 x 325 x 360 (mm)
④ Weight (net)	9.1kg

NOTE : Specification are subject to change without notice in the course of product improvement.

ADJUSTMENTS

This set has been aligned at the factory and normally will not require further adjustment. As a result, it is not recommended that any attempt is made to modificate any circuit. If any parts are replaced or if anyone tampers with the adjustment, realignment may be necessary.

IMPORTANT

1. Check Power-source voltage.
2. Set the function switch to band being aligned.
3. Turn volume control to minimum unless otherwise noted.
4. Connect low side of signal source and output indicator to chassis ground unless otherwise specified.
5. Keep the signal input as low as possible to avoid AGC and AC action.

TAPE DECK ADJUSTMENT

1. AZIMUTH ADJUSTMENT

Deck Mode	Test Tape	Test Point	Adjustment	Adjust for
A Deck Playback	MTT-114	Speaker Out	DECK Screw Azimuth Screw	Maximum
B Deck Playback	MTT-114	Speaker Out	Azimuth Screw	Maximum

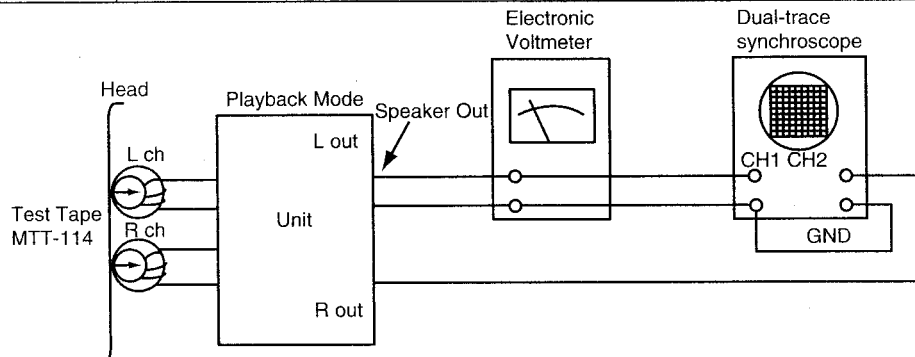


Figure 1. Azimuth Adjustment Connection Diagram

2. MOTOR SPEED ADJUSTMENT

Deck Mode	Test Tape	Test Point	Adjustment	Adjust for	Remark
Normal Speed	MTT-111	Speaker Out	VR201	3kHz $\pm$ 1%	A Deck
HI-Speed	MTT-111	Speaker Out	more than 5.4kHz		HI-Speed Dubbing Mode

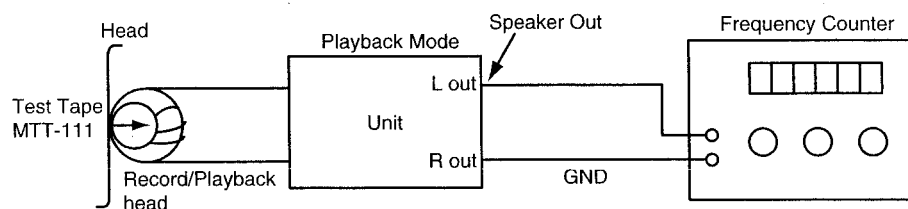


Figure 2. Motor Speed Adjustment Connection Diagram

3. RECORD BIAS ADJUSTMENT

Deck Mode	Test Tape	Test Point	Adjustment	Adjust for
Rec/Pause	MTT-5511	ERASE HEAD WIRE(PN202)	L203	85kHz±5kHz (Auto-Reverse)

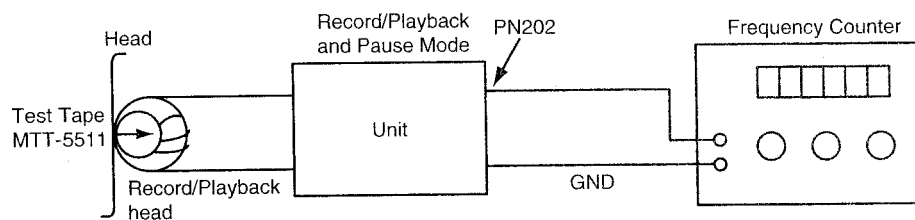


Figure 3. Record Bias Adjustment Connection Diagram

4. TUNER ADJUSTMENT

Item	Test Point	Adjustment	Adjust for
DC Voltage	Checker Pin	L106	0V ± 50mV
MW Usable Sensitivity	Speaker Out	L107	Maximum
LW/SW Usable Sensitivity	Speaker Out	L105	Maximum

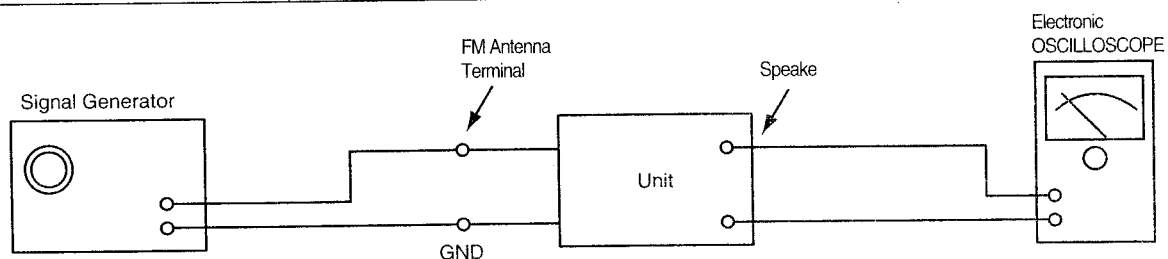
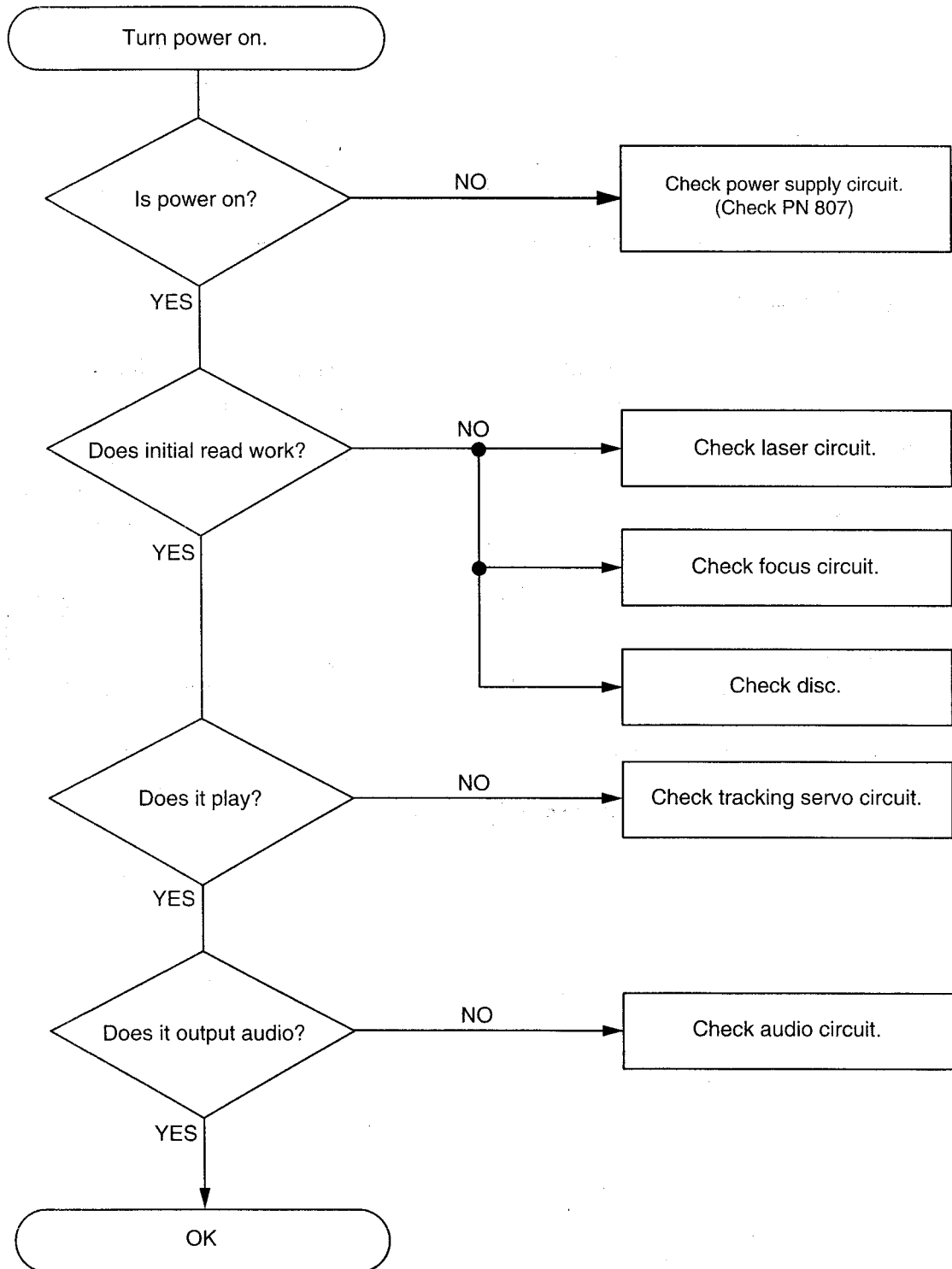
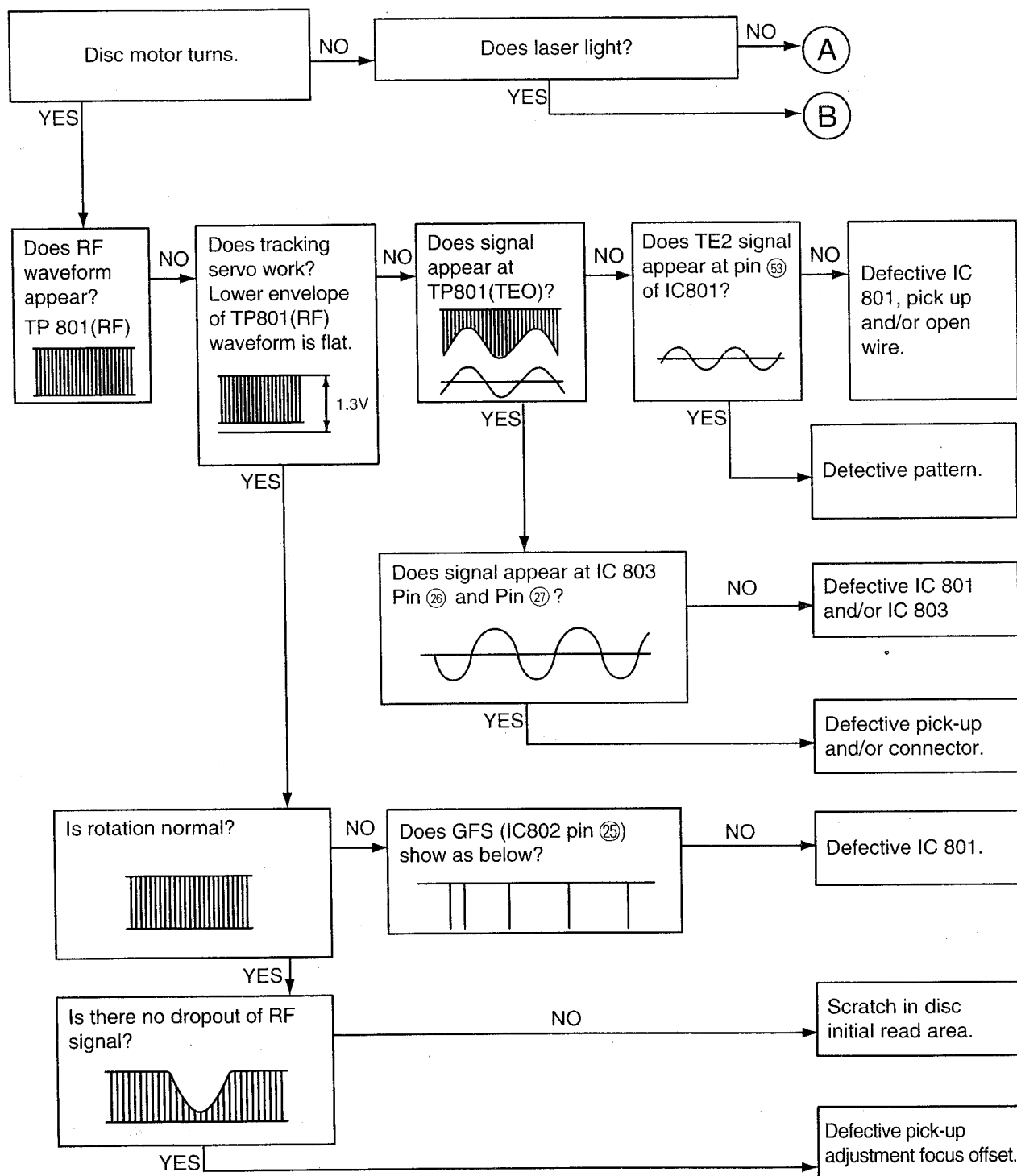


Figure 4. Tuner(S curve) Adjustment Connection Diagram

TROUBLESHOOTING

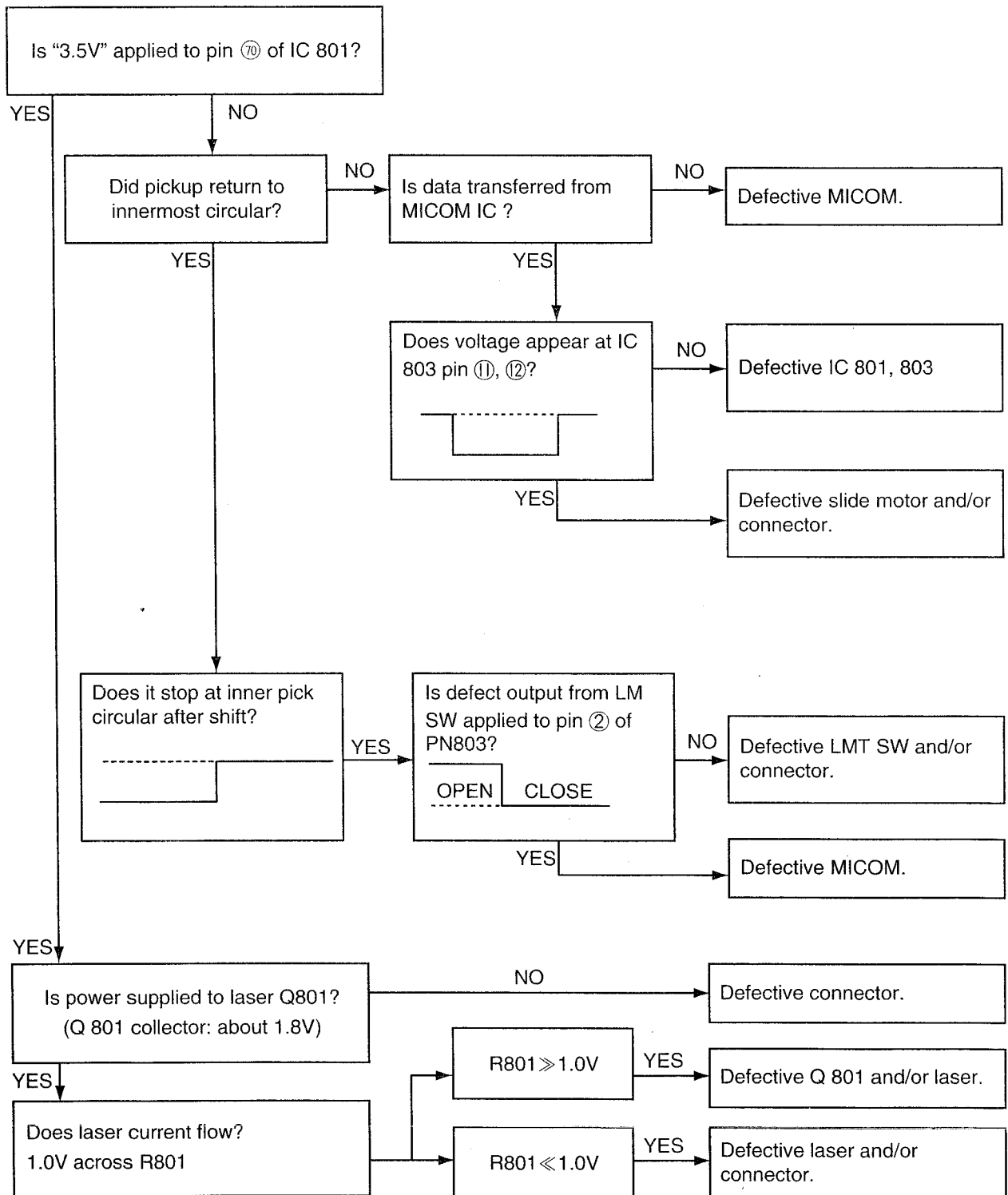


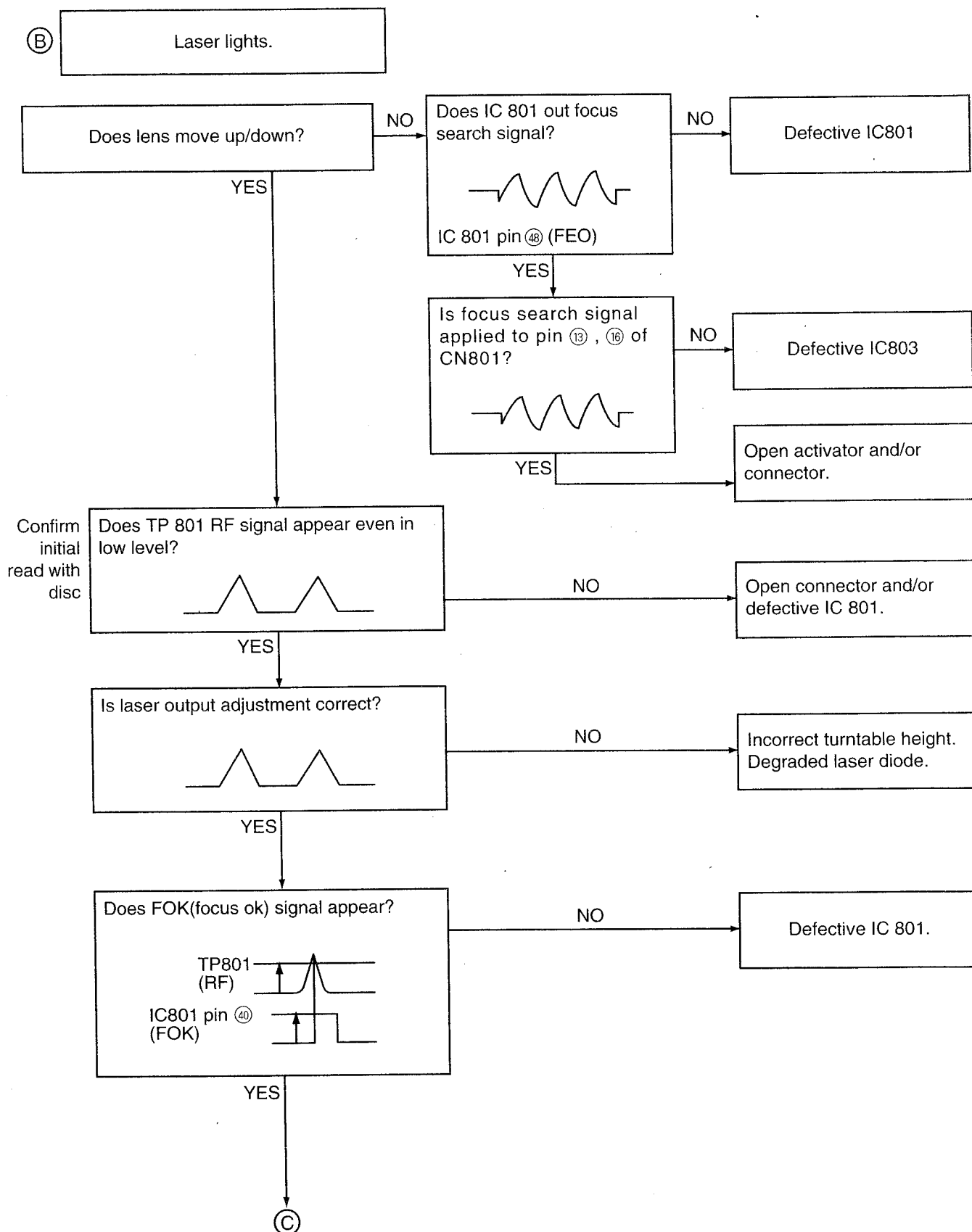
Fails to initial read

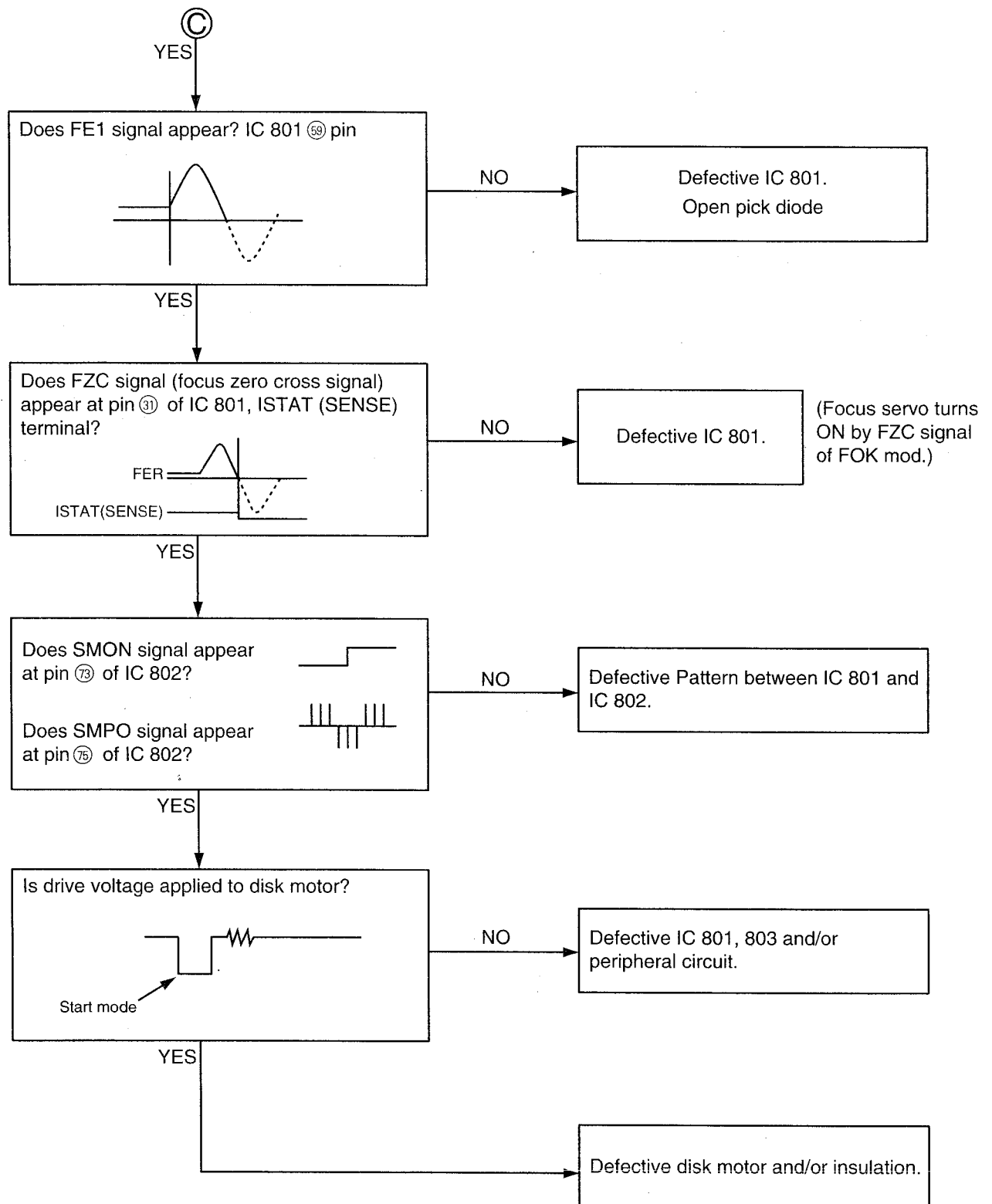


Ⓐ

Laser does not light.

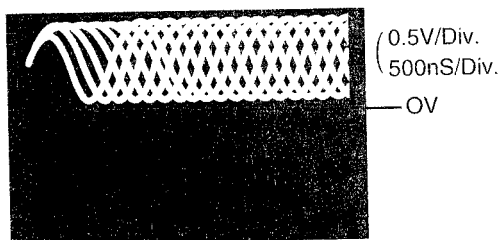




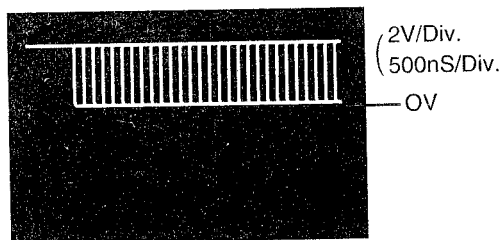


WAVEFORMS OF MAJOR CHECK POINT

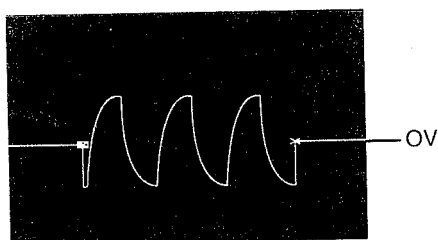
1. HF signal (RF signal) waveform
(Test Point TP801) during normal play



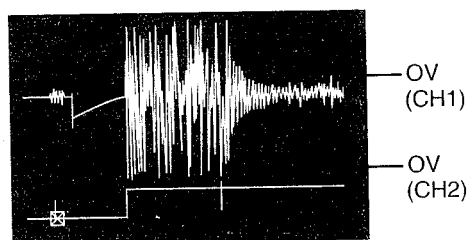
2. EFM signal (pin ③ IC 801) waveform
during Normal Play



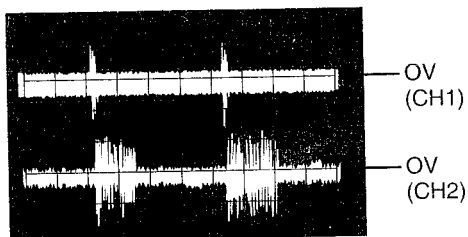
3. Focus coil drive waveform (Pin NO ①, ② of IC 803)
· When focus search failed or there is no disc on the tray



- Focus coil drive waveform (pin NO ①, ② of IC803) and
FOK (pin NO ④ of IC 801) when focus search is
accomplished

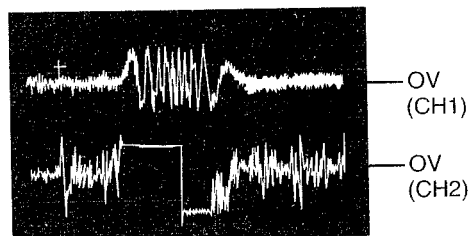


4. Tracking coil drive waveform (pin NO ②⑥, ②⑦ of IC 803)
and TEO during track traverse
(1) When time division is 20nS/div



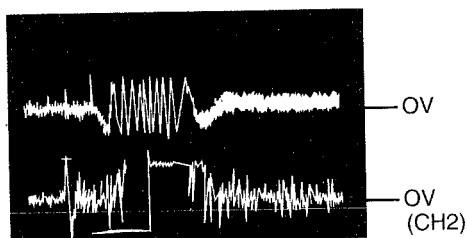
(CH1 : TEO(TP801)
1V/Div.
CH2 : TRACK COIL DRIVE
SIGNAL 2V/Div.

- (2) When time division 0.5nS/div.
(During forward track traverse)



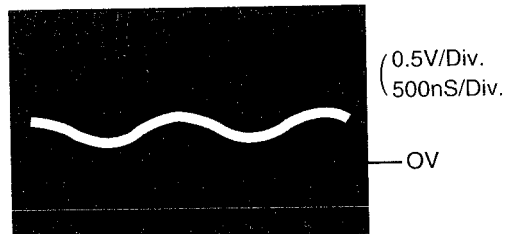
(CH1 : TEO(TP801)
1V/Div.
CH2 : TRACKING COIL DRIVE
SIGNAL 2V/Div.

- (3) When time division is 0.5nS/div.
(During backward Track Traverse)



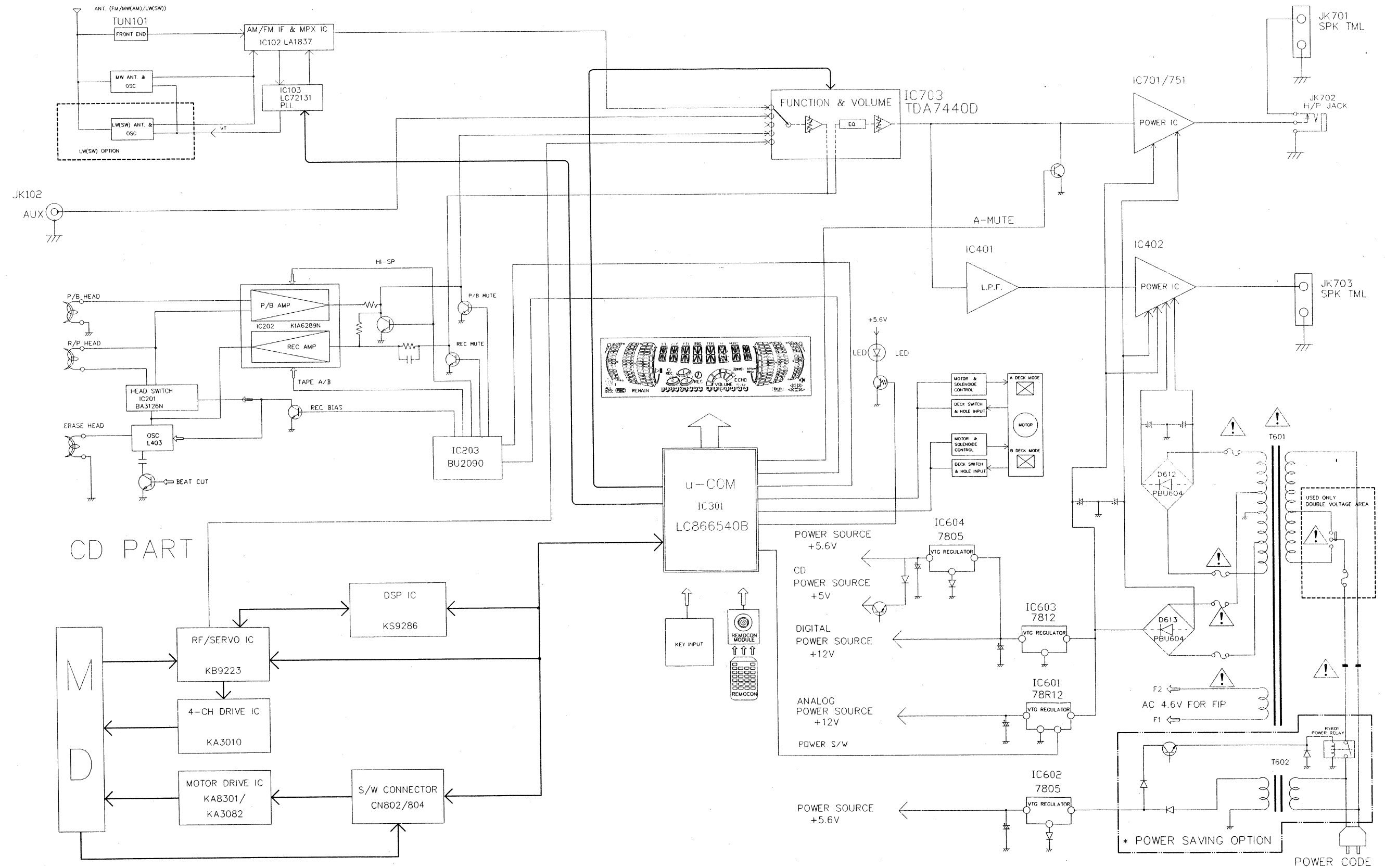
(CH1 : TEO(TP801)
1V/Div.
CH2 : TRACKING COIL DRIVE
SIGNAL 2V/Div.

5. Feed motor drive waveform (pin NO ⑪, ⑫ of IC 803)
During normal play



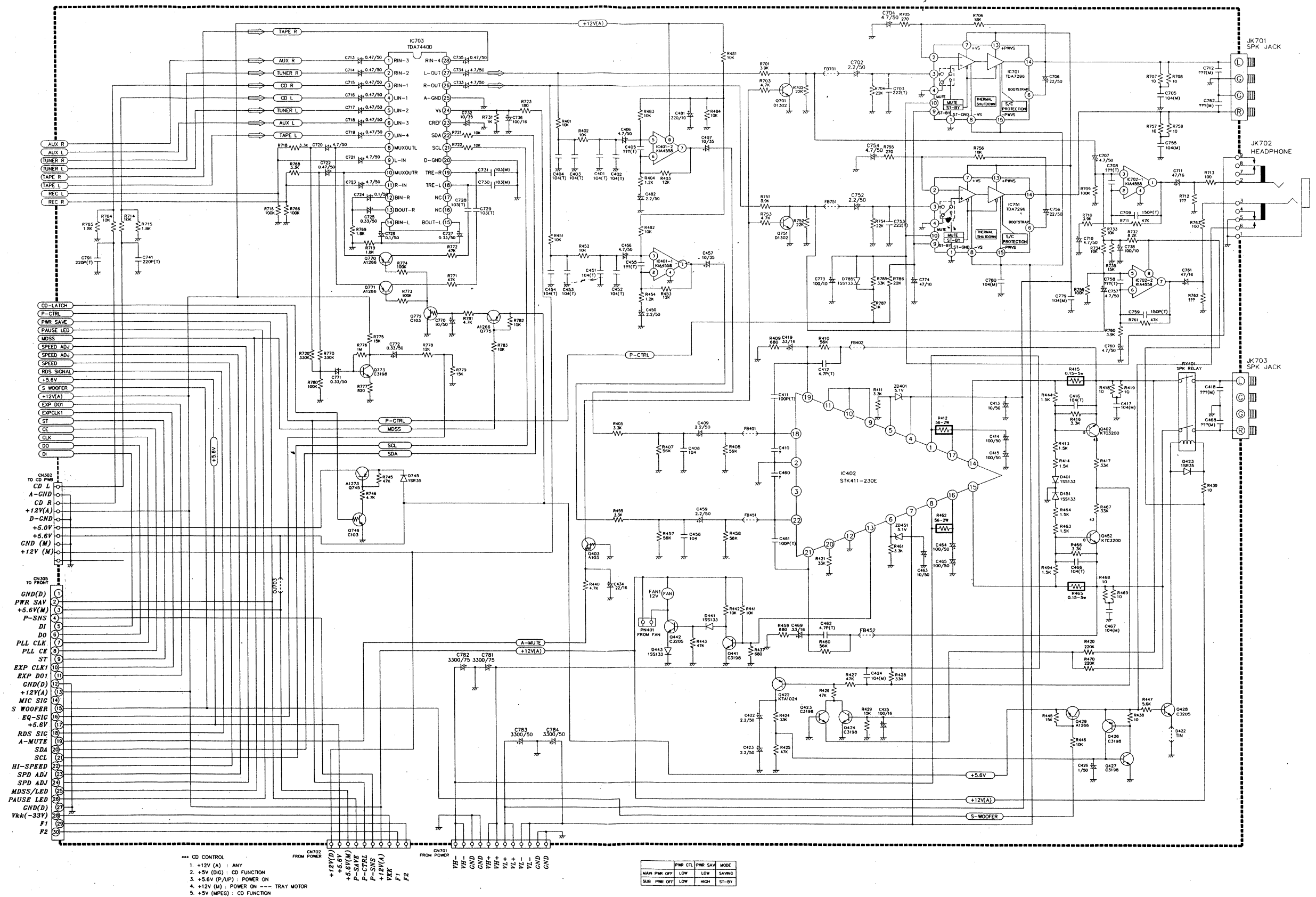
MEMO

BLOCK DIAGRAM



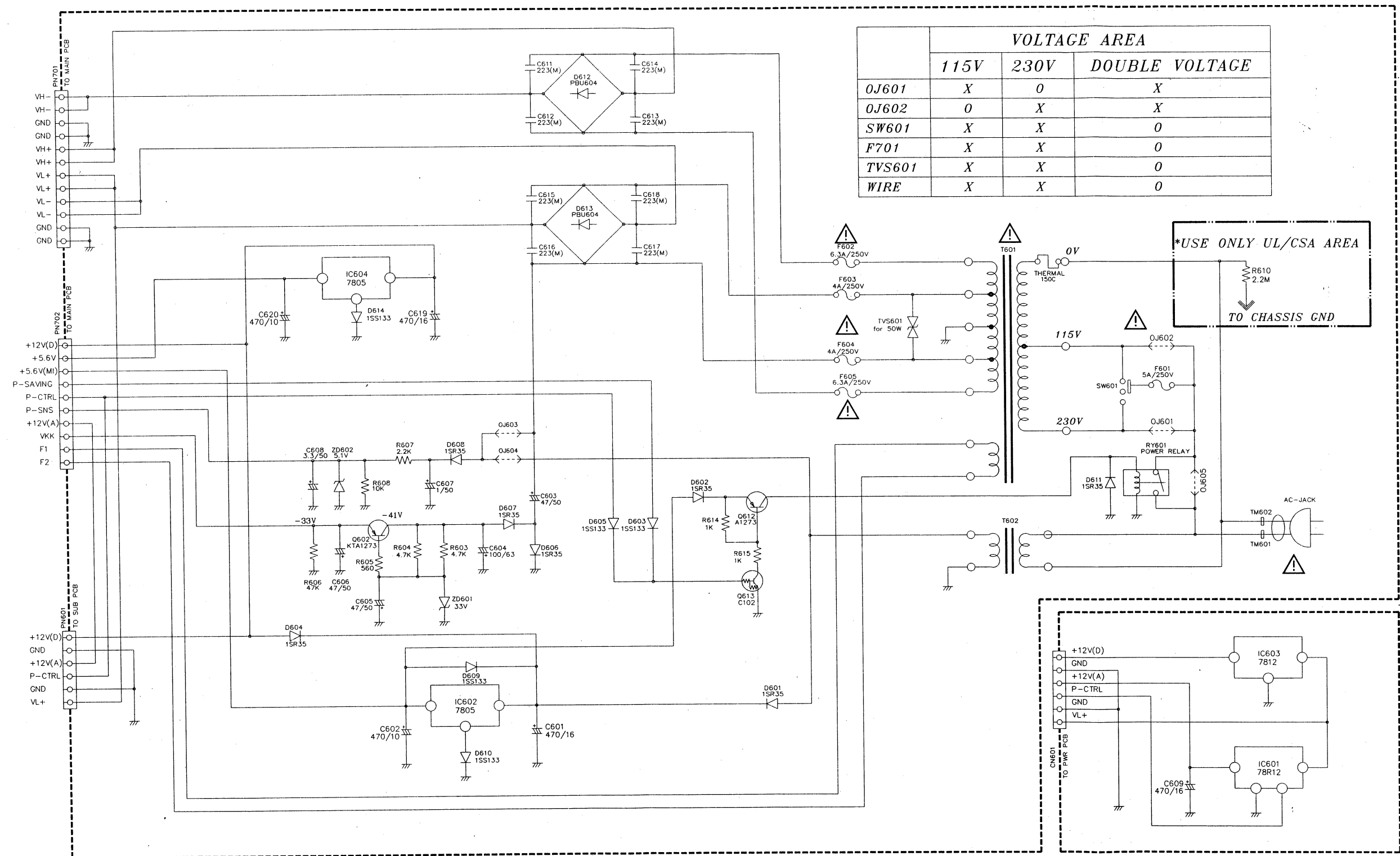
SCHEMATIC DIAGRAMS

• AMP CIRCUIT

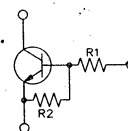


SCHEMATIC DIAGRAMS

• POWER CIRCUIT

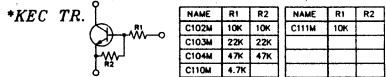


*KEC TR.



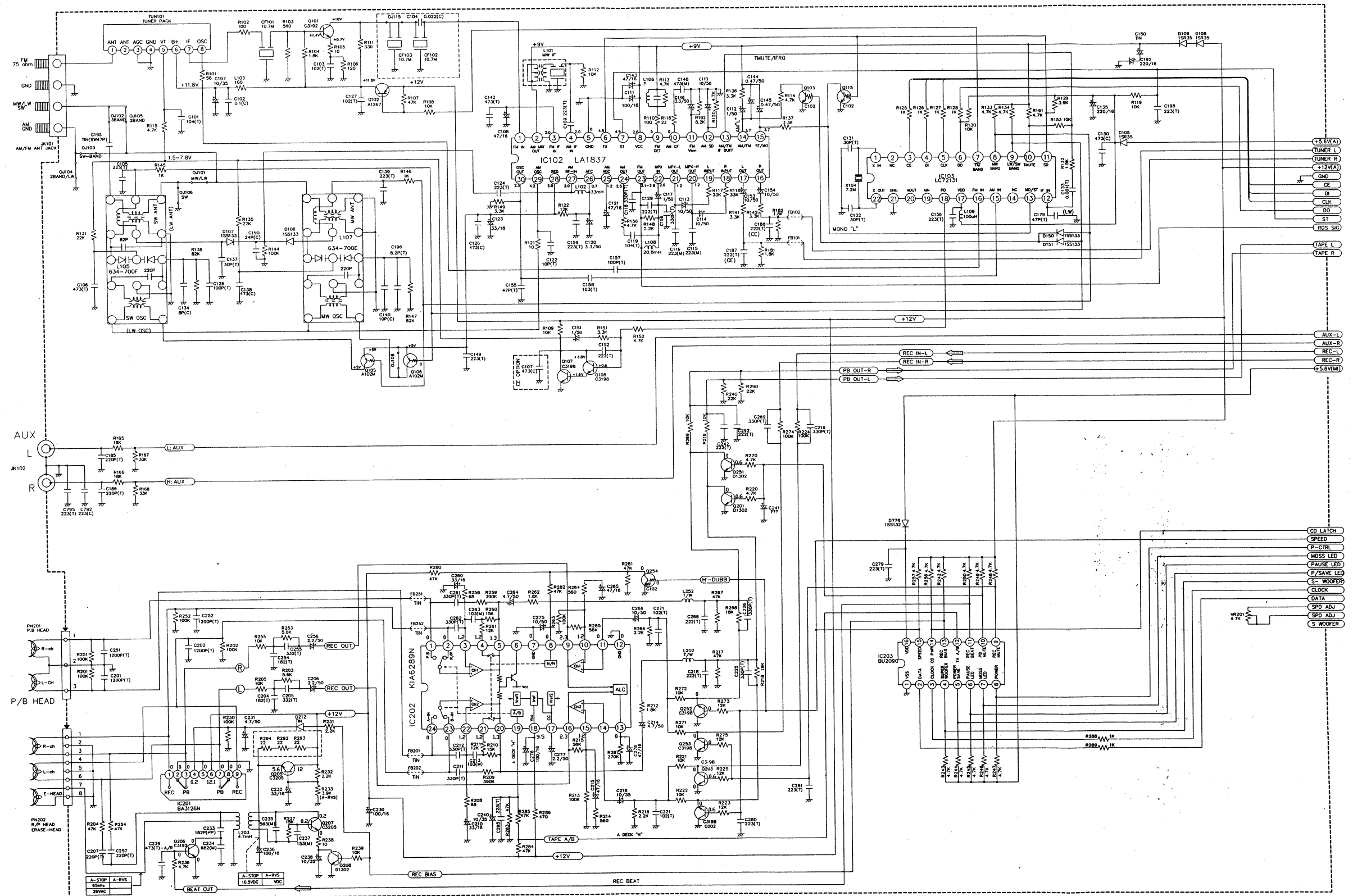
NAME	R1	R2	NAME	R1	R2
C102M	10K	10K	C111M	10K	
C103M	22K	22K			
C104M	47K	47K			
C110M	4.7K				

- **FRONT**



NOTES : Resistance values are indicated in ohms unless otherwise specified (K=1,000, M=1,000,000).
Capacitance values are shown in microfarads unless otherwise (P=MICRO-MICRO FARADS).
Schematic diagram for this model are subject to change for improvement without prior notice.

• TUNER & DECK CIRCUIT



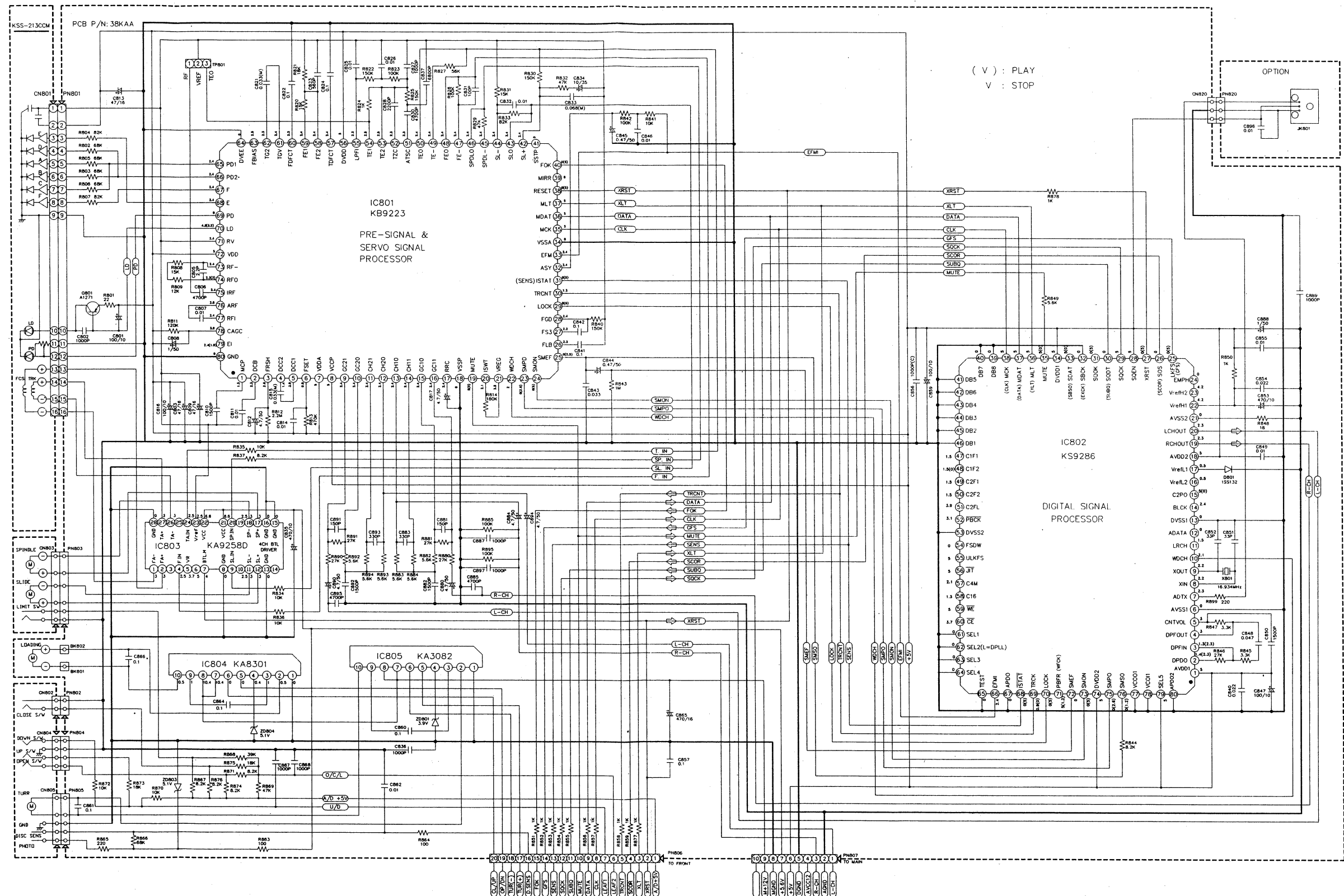
NOTES : Resistance values are indicated in ohms unless otherwise specified (K=1,000, M=1,000,000).
Capacitance values are shown in microfarads unless otherwise (P=MICRO-MICRO FARADS).
Schematic diagram for this model are subject to change for improvement without prior notice.

*NOTE1
LW BAND: C128(100P) → ADD
R116(22K → 247) → CHANGE
C179(47P) → ADD

*NOTE2
SOLUS AREA: C115/116(333 → 223) : CHANGE
C236(473(T)) : ADD
R117/118(33K → 215K) → CHANGE
C187/188 (2200P) : ADD

*NOTE3
A/RVS DECK: Q206(C3192 → C3198) C234(682(M) → 562(M))
C236(473(T)) : ADD C233(182 → 122P(P))
R204/254(47K → 312K) R233(3.9K) : ADD

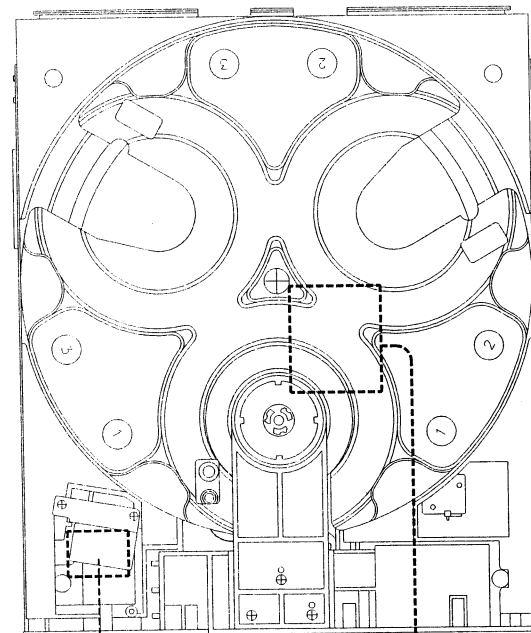
• CD



NOTES : Resistance values are indicated in ohms unless otherwise specified (K=1,000, M=1,000,000).
Capacitance values are shown in microfarads unless otherwise (P=MICRO-MICRO FARADS).
Schematic diagram for this model are subject to change for improvement without prior notice.

WIRING DIAGRAM

3CD CHANGER MECHANISM ASSY



CD MAIN PWB

PN806 20P

JK101
ANT. TERMINAL

JK102
AUX

JK102
MAIN SPK. TERMINAL

JK401
SUPER WOOFER SPK. TERMINAL

MAIN PWB

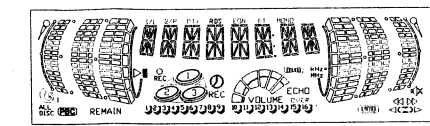
HEAT-SINK

POWER PWB

AC POWER CORD

USED ONLY
DOUBLE VOLTAGE AREA

AC POWER CORD



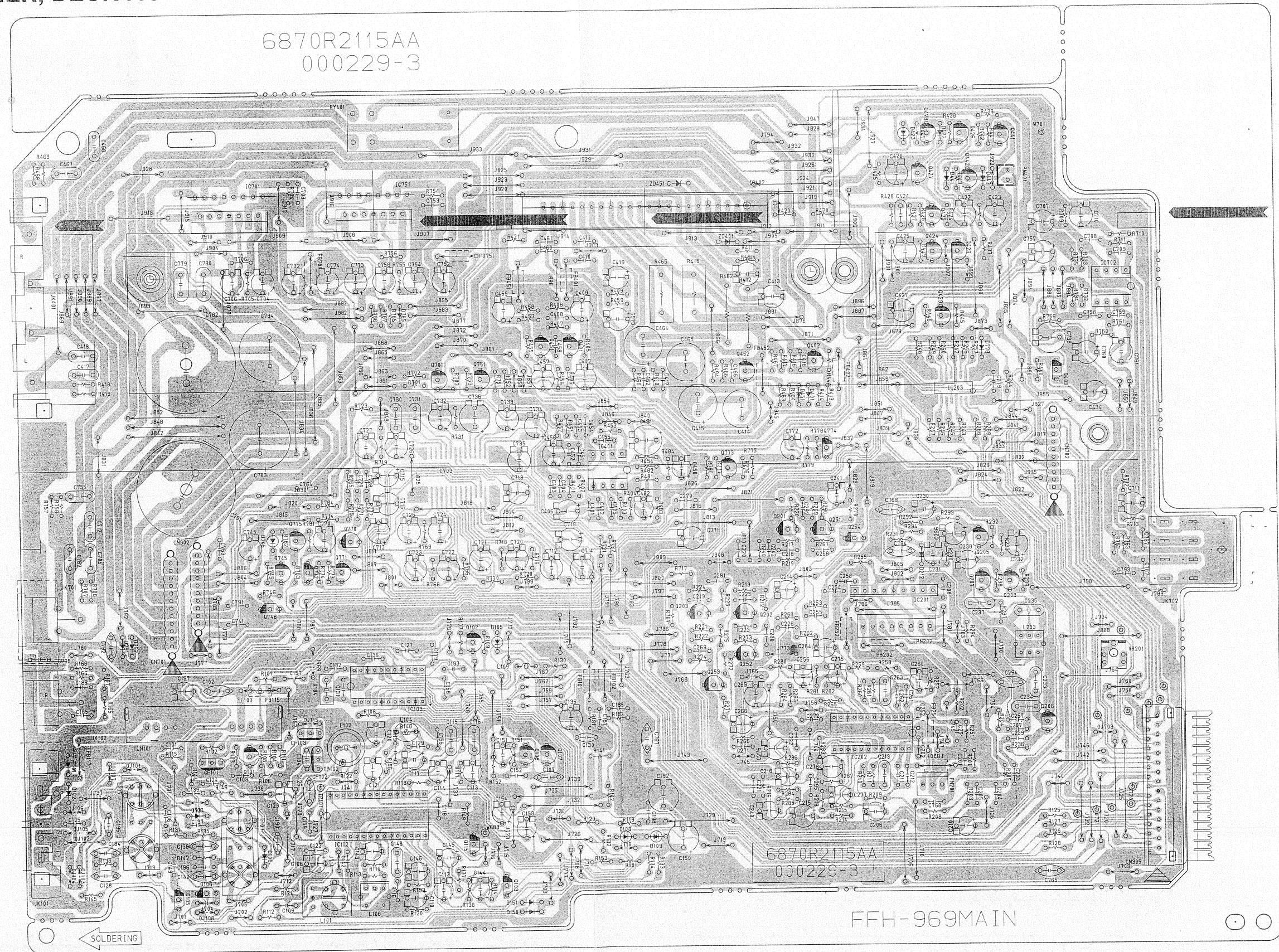
FRONT PWB

DECK MECHANISM

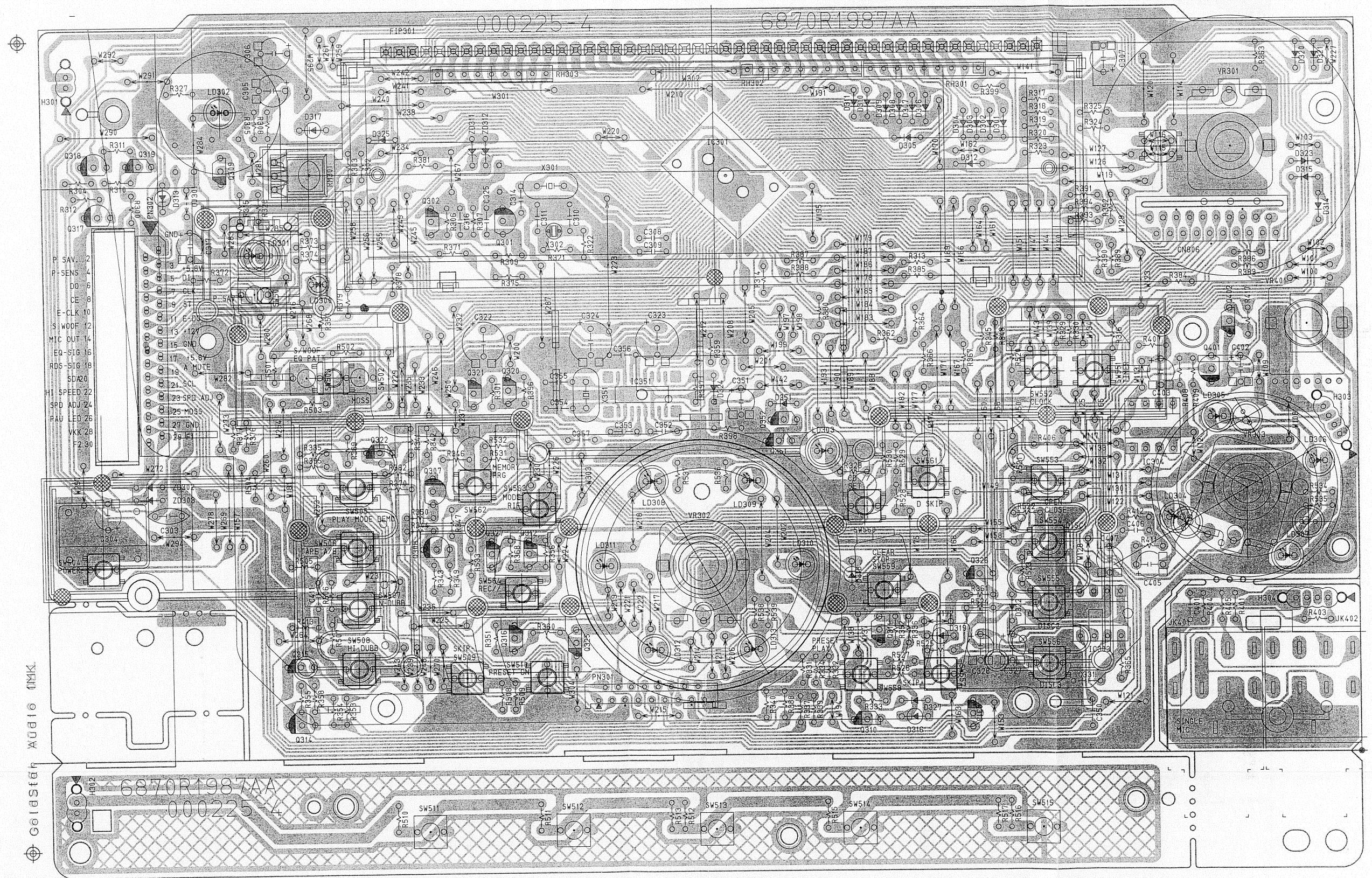
NOTES: Wiring diagram for this model are subject to change for improvement without prior notice.

PCB LAYOUTS

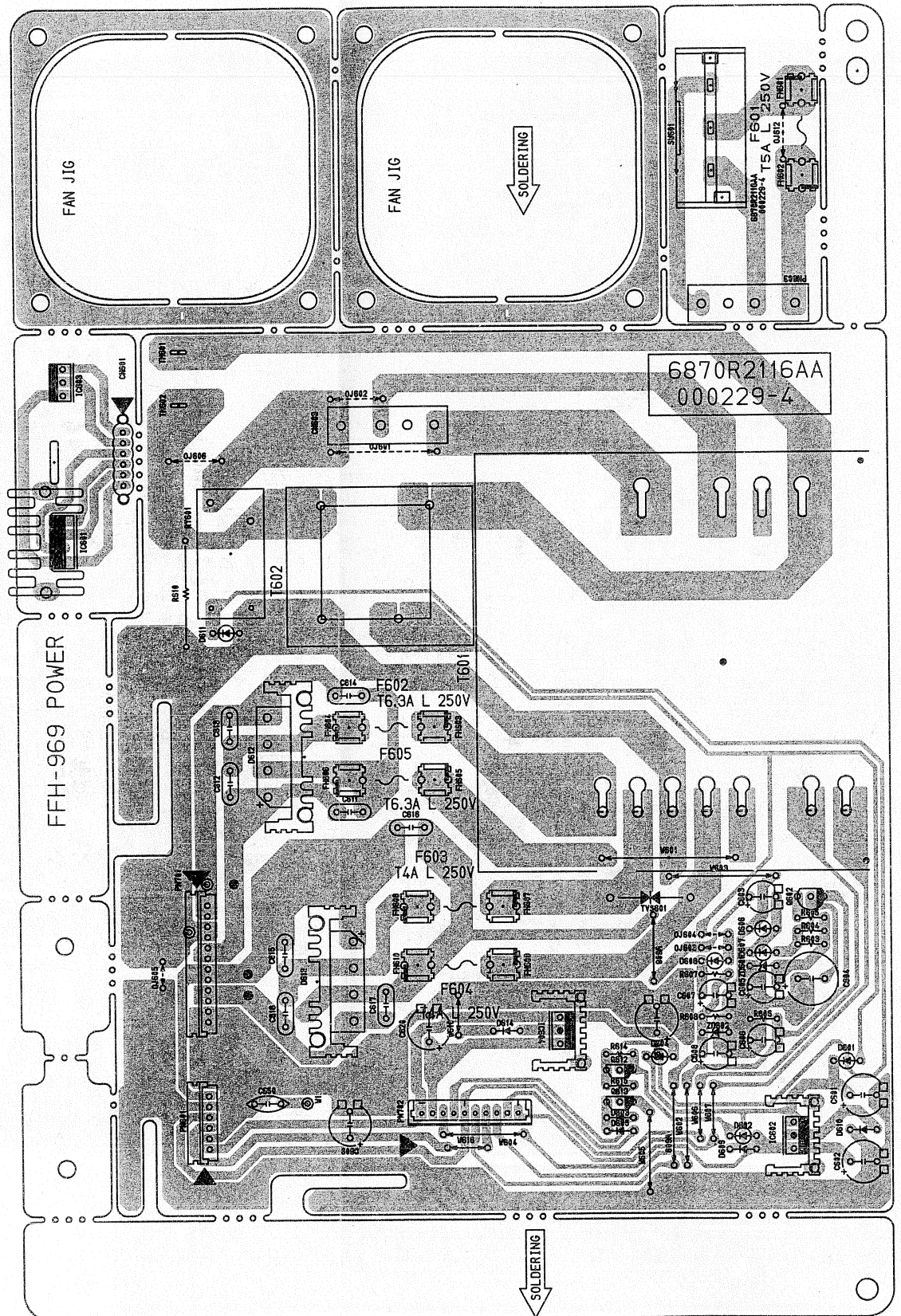
• AMP, TUNER, DECK P.C. BOARD



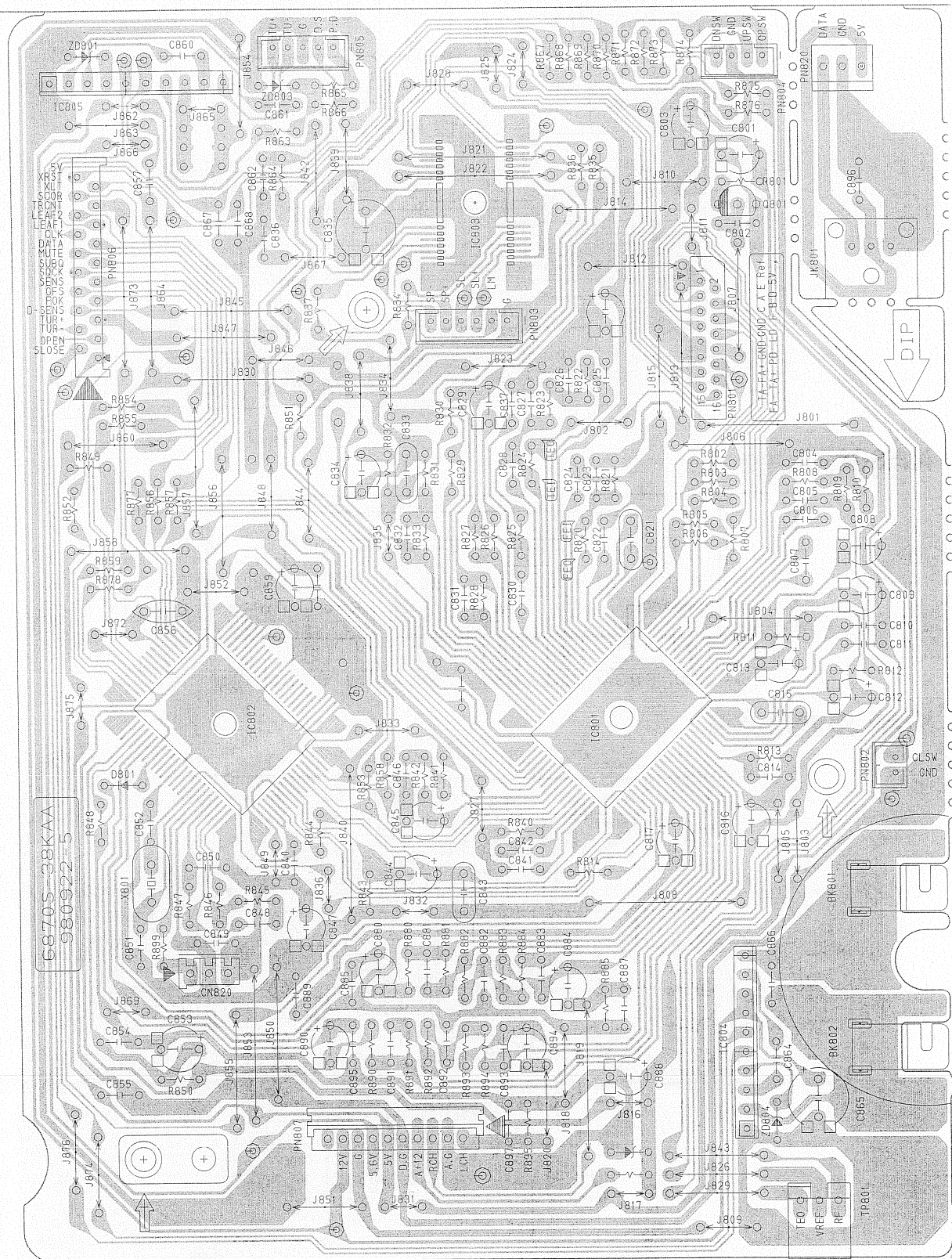
• FRONT P.C. BOARD



• POWER P.C. BOARD

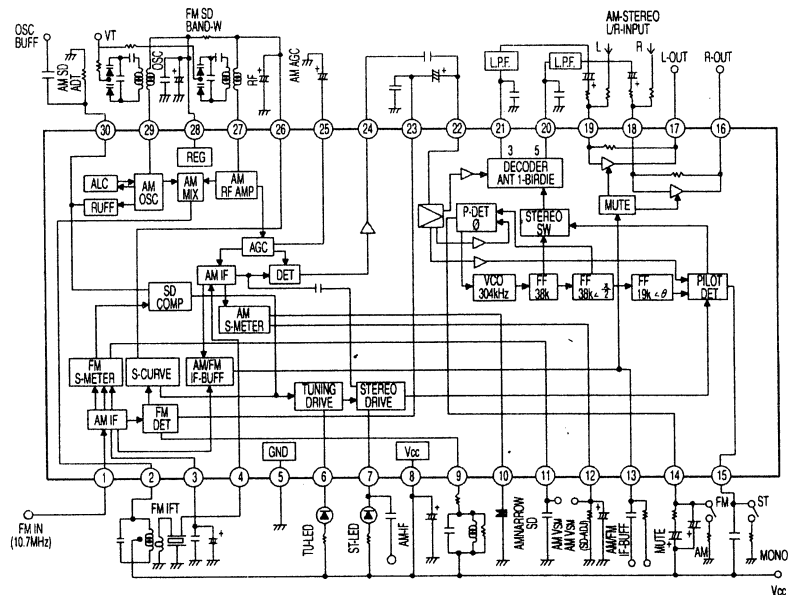


• CD MAIN P.C. BOARD

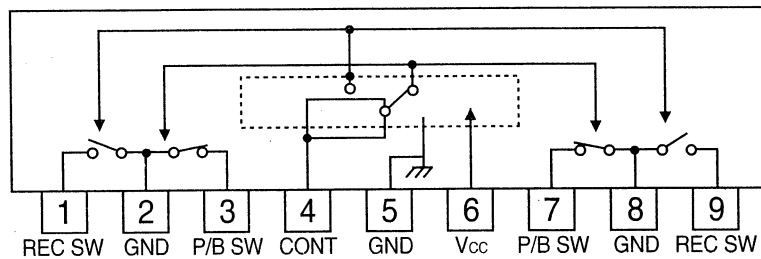


INTERNAL BLOCK DIAGRAM OF ICs

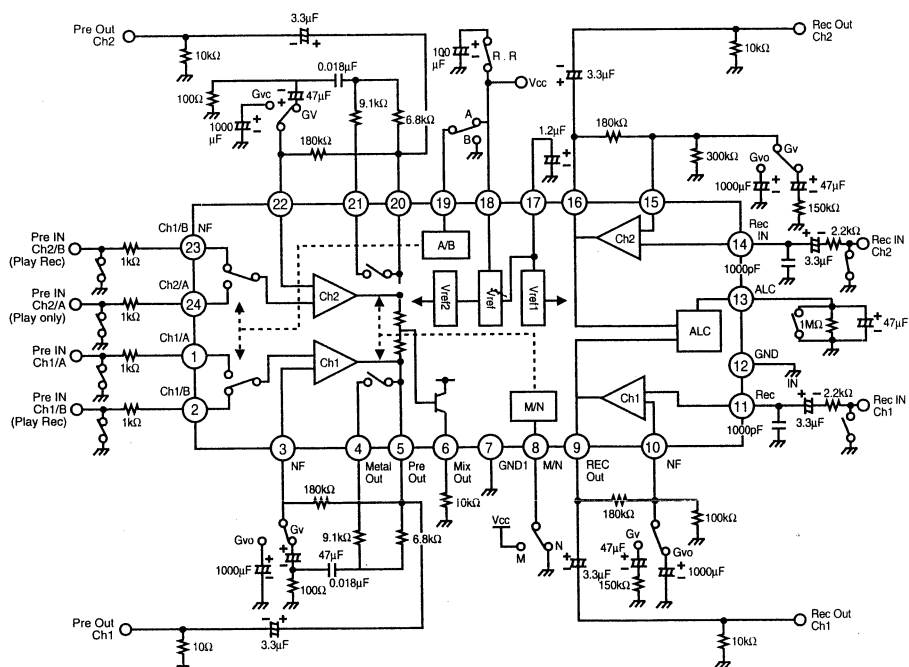
LA1837



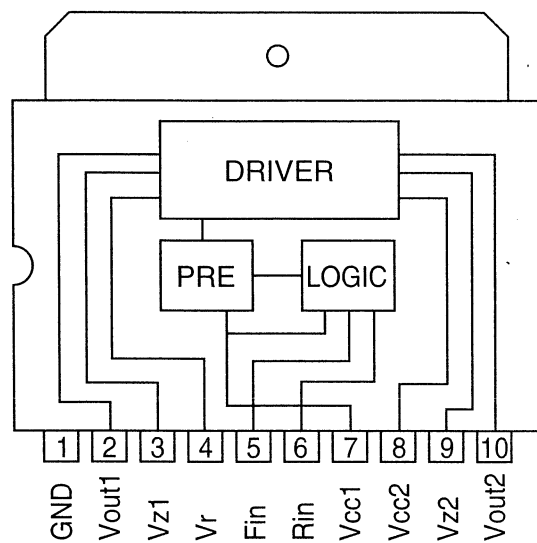
KA3082



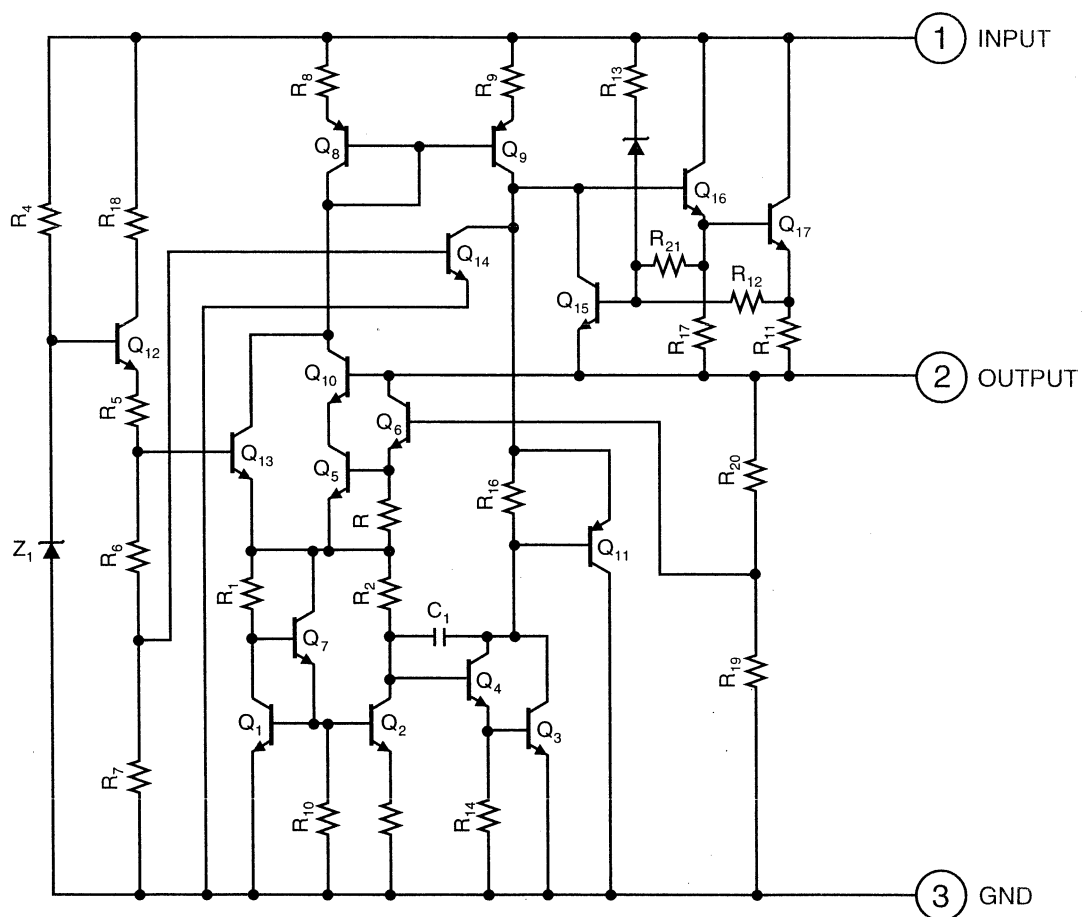
KIA6289N



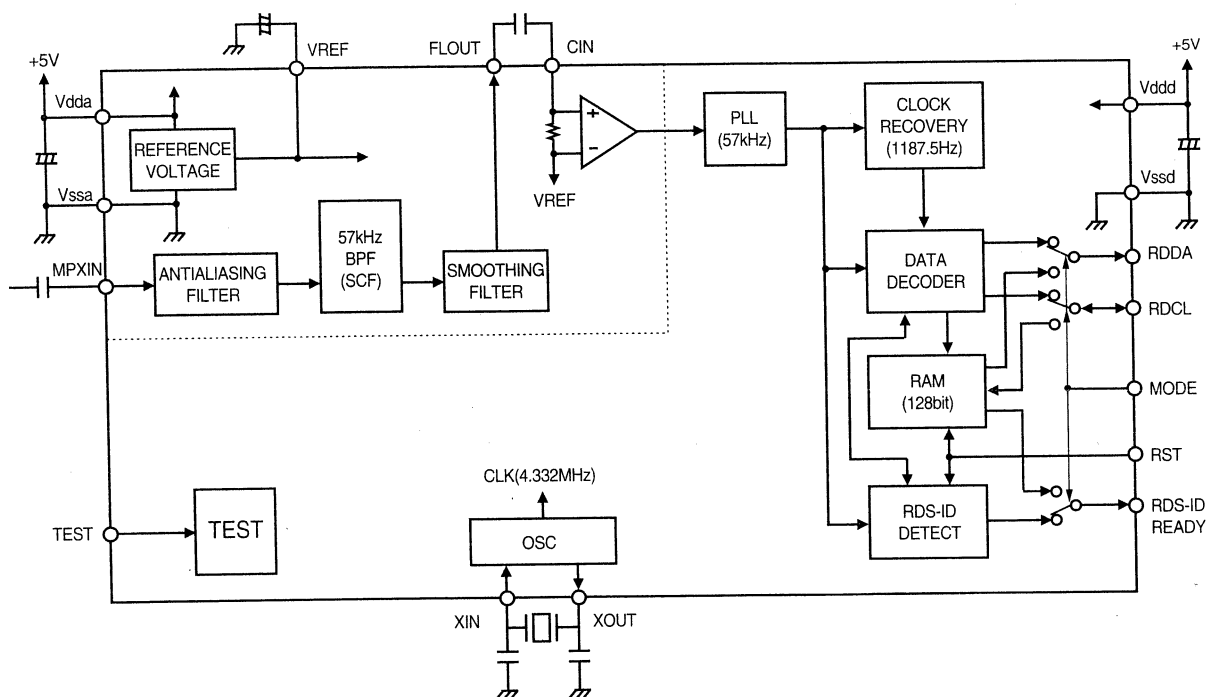
■ KA8301



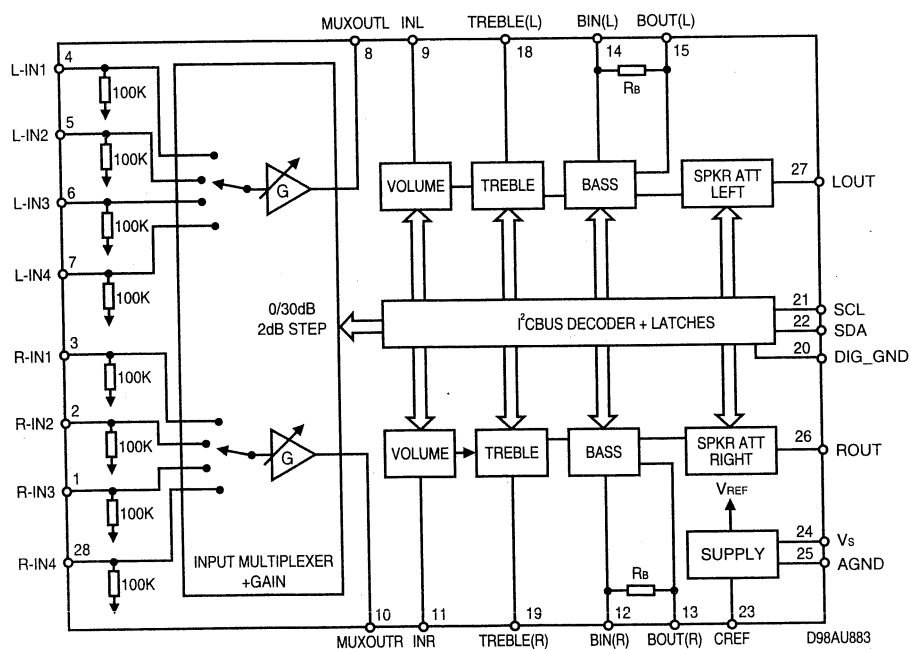
■ KIA7805 P/PI ~ KIA7824P/PI



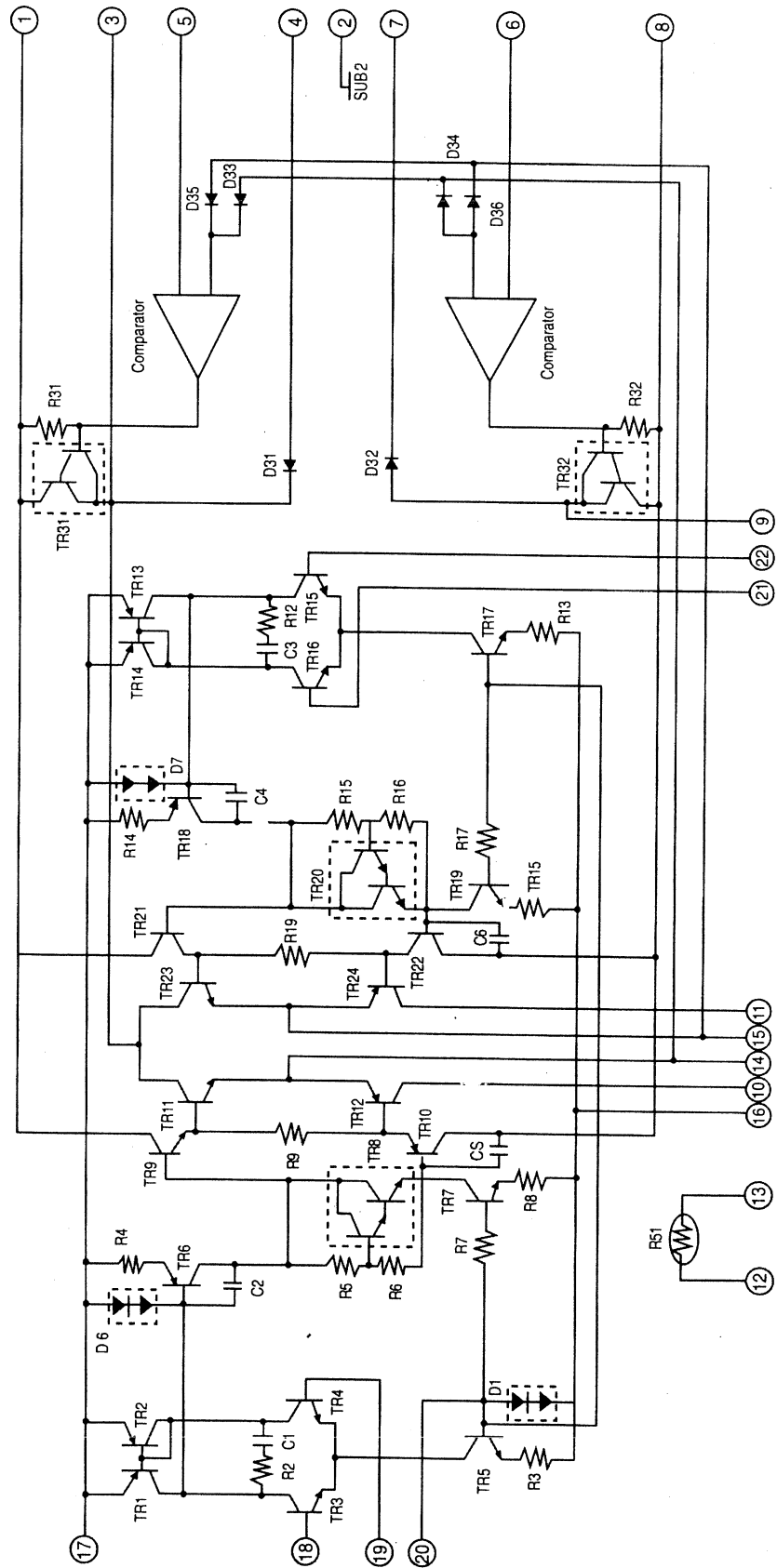
■ LC7273M



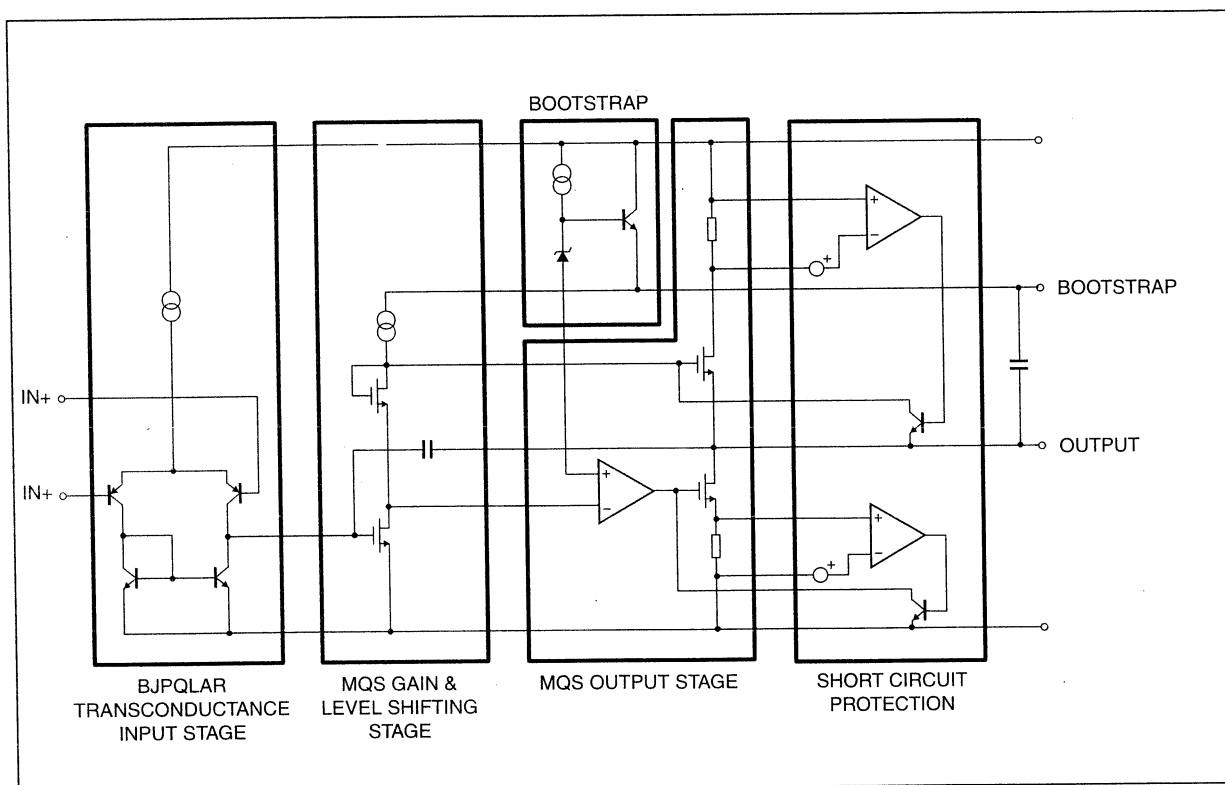
■ TDA7440D



STK411-230E



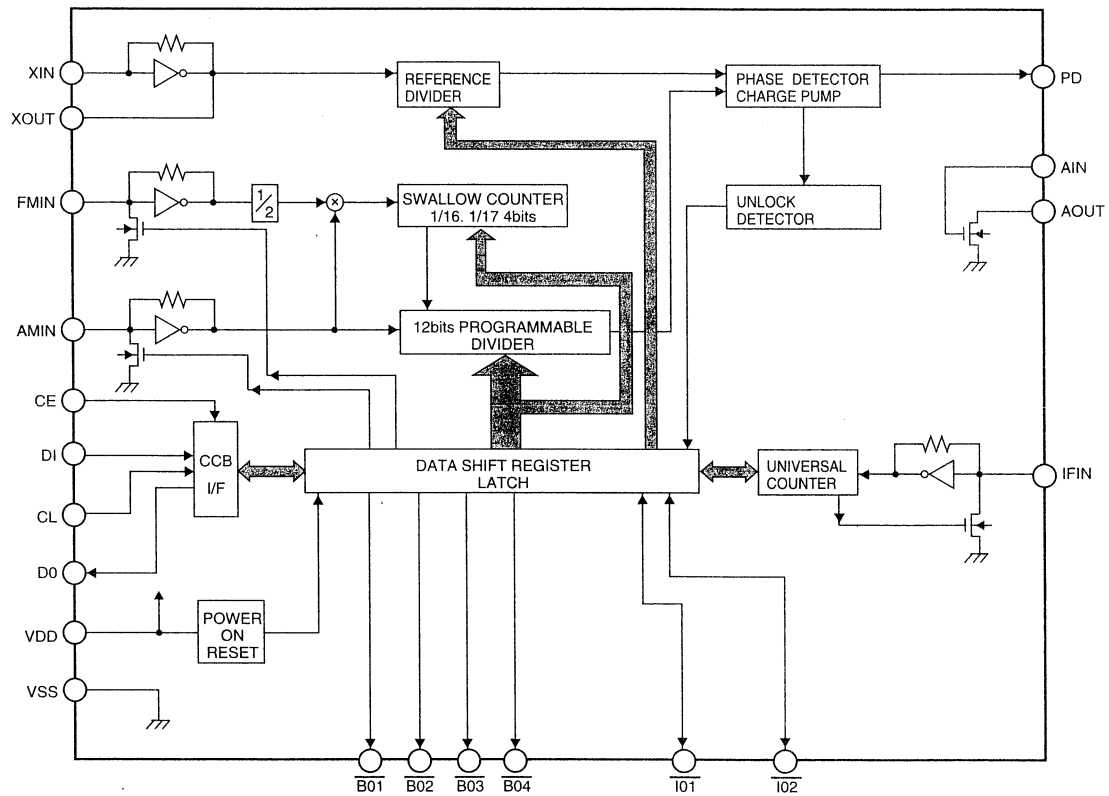
TDA7296



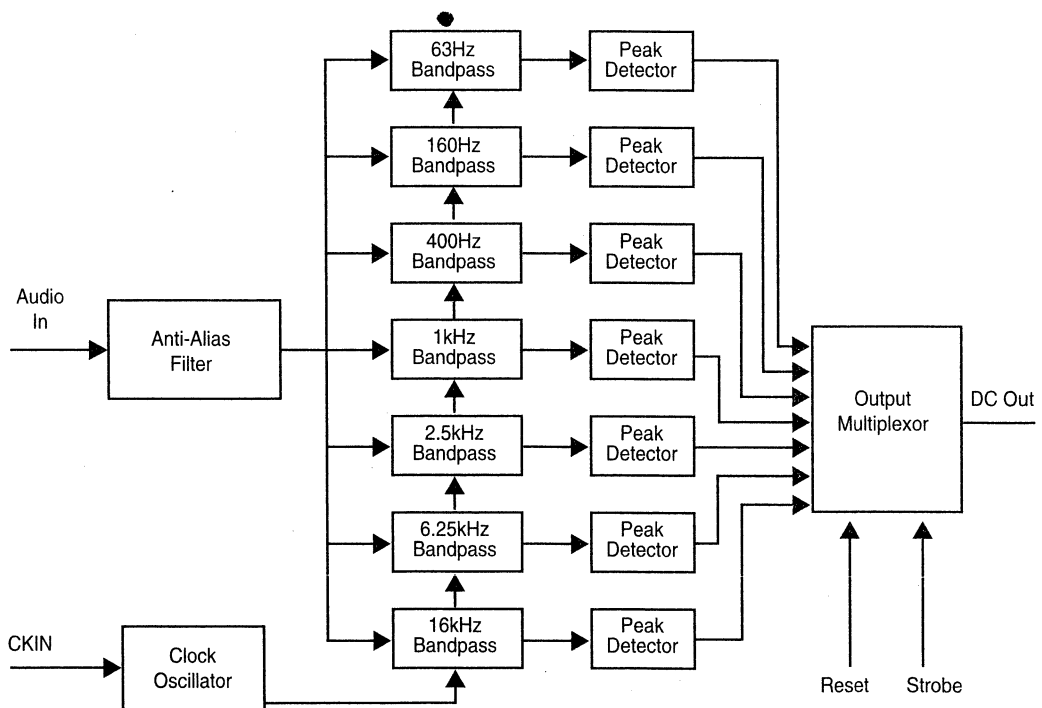
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{SS}	Supply Voltage	± 35	V
I_o	Output Peak Current	5	A
P_{tot}	Power Dissipation $T_{case} = 70^\circ C$	50	W
T_{op}	Operating Ambient Temperature Range	0 to 70	$^\circ C$
T_{stg}, T_j	Storage and Junction Temperature	150	$^\circ C$

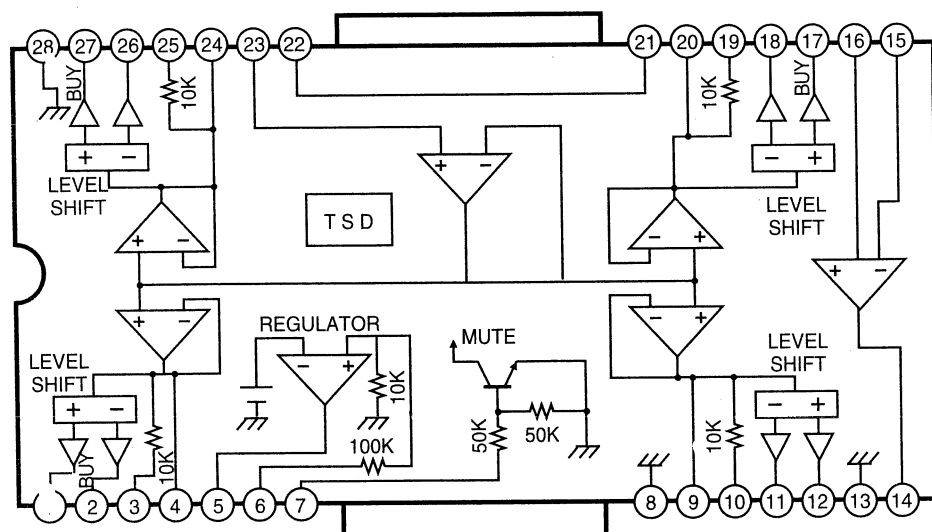
■ LC72131, 72131M



■ MSGEQ7



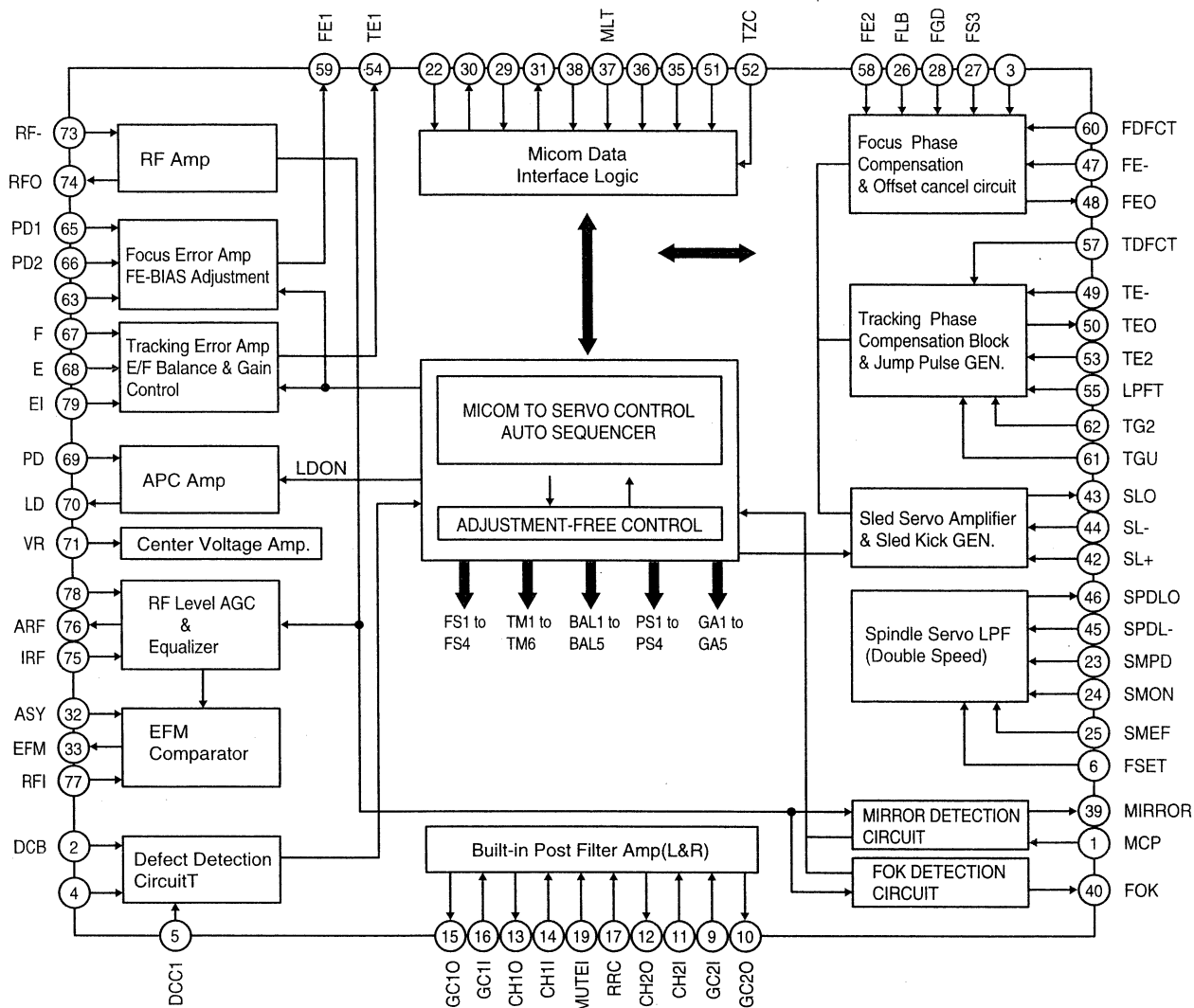
KA3010



PIN DESCRIPTION

Pin No.	Symbol	I/O	Description
1	DO1.1	O	DRIVE OUTPUT
2	DO1.2	O	DRIVE OUTPUT
3	DI1.1	I	DRIVE INPUT
4	DI1.2	I	DRIVE INPUT
5	REG		REGULATOR
6	REO	O	REGULATOR OUTPUT
7	MUTE		MUTE
8	GND1		GROUND
9	DI2.1	I	DRIVE INPUT
10	DI2.2	I	DRIVE INPUT
11	DO2.1	O	DRIVE OUTPUT
12	DO2.2	O	DRIVE OUTPUT
13	GND2		GROUND
14	OPOUT	O	OPAMP OUTPUT
15	OPIN (-)	I	OPAMP OUTPUT (-)
16	OPIN (+)	I	OPAMP INPUT (+)
17	DO3.1	O	DRIVE OUTPUT
18	DO3.2	O	DRIVE OUTPUT
19	DI3.1	I	DRIVE INPUT
20	DI3.2	I	DRIVE INPUT
21	VCC1		SUPPLY VOLTAGE
22	VCC2		SUPPLY VOLTAGE
23	VREF		2.5V BIAS VOLTAGE
24	DI4.1	I	DRIVE INPUT
25	DI4.2	I	DRIVE INPUT
26	DO4.1	O	DRIVE OUTPUT
27	DO4.2	O	DRIVE OUTPUT
28	GND3		GROUND

KB9223

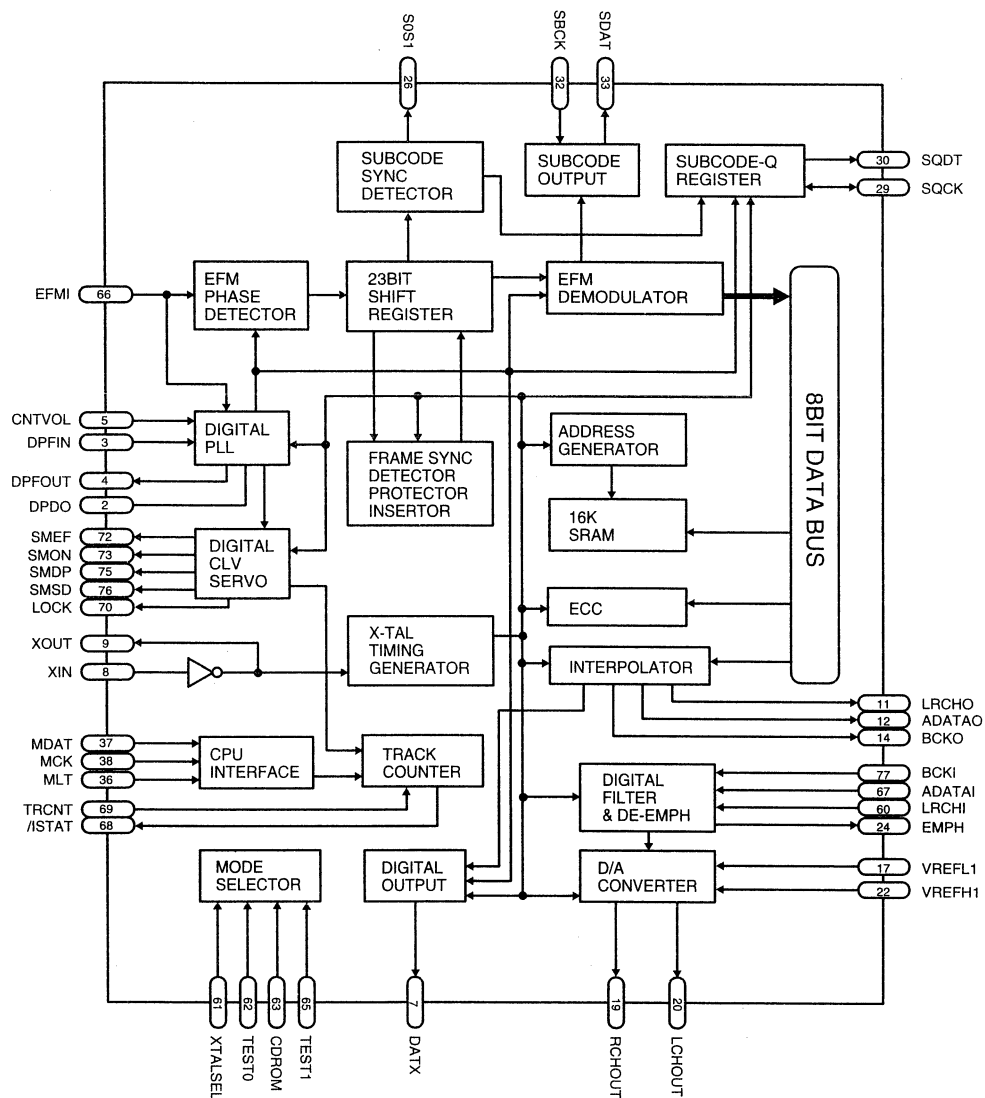


PIN DESCRIPTION

Pin No.	System	Description
1	MCP	Capacitor connection pin for mirror hold
2	DCB	Capacitor connection pin for defect Bottom hold
3	FRSH.	Capacitor connection pin for time constant to generate focus search waveform
4	DCC2	The input pin through capacitor of defect bottom hold output
5	DCC1	The output pin of defect bottom hold
6	FSET	The peak frequency setting pin for focus, tracking servo and cut off frequency of CLV LPF
7	VDDA	Analog VCC for servo part
8	VCCP	VCC for post filter
9	GC2I	Amplifier negative input pin for gain and low pass filtering of DAC output CH2
10	GC2O	Amplifier output pin for gain and low pass filtering of DAC output CH2
11	CH2I	The input pin for post filter channel2
12	CH2O	The output pin for post filter channel2
13	CH1O	The output pin for post filter channel1
14	CH1I	The input pin for post filter channel1
15	GC1O	Amplifier output pin for gain and low pass filtering of DAC output CH1

Pin No.	System	Description
16	GC1I	Amplifier negative input pin for gain and low pass filtering of DAC output CH1
17	RRC	The pin for noise reduction of post filter bias
18	VSSP	VSS for post filter
19	MUTEI	The input pin for post filter muting control
20	ISSET	The input pin for current setting of focus search, track jump and sled kick voltage
21	VREG	The output pin of regulator
22	WDCK	The clock input pin for auto sequence
23	SMDP	The input pin of CLV control output pin SMDP of DSP
24	SMON	The input pin for spindle servo ON through SMON of DSP
25	SMEF	The input pin of provide for an external LPF time constant
26	FLB	Capacitor connection pin to perform rising low bandwidth of focus loop
27	FS3	The pin for high frequency gain change of focus loop with internal FS3 switch
28	FGD	Reducing high frequency gain with capacitor between FS3 pin
29	LOCK	Sled runaway prevention pin
30	TRCNT	Track count output pin
31	ISTAT	Internal status output pin
32	ASY	The input pin for asymmetry control
33	EFM	EFM comparator output pin
34	VSSA	Analog VSS for servo part
35	MCK	Micom clock input pin
36	MDATA	Micom data input pin
37	MLT	Micom data latch input pin
38	RESET	Reset input pin
39	MIRROR	The mirror output for test
40	FOK	The output pin of focus OK comparator
41	SSTOP	The pin for detection whether pick_up position is innermost or not
42	SL+	The noninverting input pin of sled servo amplifier
43	SLO	The output pin of sled servo amplifier
44	SL-	The inverting input pin of sled servo amplifier
45	SPDL-	The noninverting input pin of spindle servo amplifier
46	SPDLO	The output pin of spindle servo amplifier
47	FE-	The inverting input pin of focus servo amplifier
48	FEO	The output pin of focus servo amplifier
49	TE-	The inverting input pin of tracking servo amplifier
50	TEO	The output pin of tracking servo amplifier
51	ATSC	The input pin for Anti-shock detection
52	TZC	The comparator input pin for tracking zero crossing detection
53	TE2	Tracking servo input pin
54	TE1	Tracking error amplifier output pin
55	LPFT	The input pin of tracking error low pass filtering signal
56	DVDD	The power supply pin for logic circuit
57	TDFCT	The capacitor connection pin for tracking defect compensation
58	FE2	Focus servo input pin
59	FE1	Focus error amplifier output pin
60	FDFCT	The capacitor connection pin for focus defect compensation
61	TGU	The capacitor connection pin for high frequency tracking gain switch
62	TG2	The pin for high frequency gain change of tracking servo loop with internal TG2 switch
63	FEBIAS	Focus error bias voltage control pin
64	DVEE	The DVEE pin for logic circuit
65	PD1	The negative input pin of RF I/V amplifier1 (A+C signal)
66	PD2	The negative input pin of RF I/V amplifier2 (B+D signal)
67	F	The negative input pin of F I/V amplifier (F signal)
68	E	The negative input pin of E I/V amplifier (E signal)
69	PD	The input pin for APC
70	LD	The output pin for APC
71	VR	The output pin of (AVEE+AVCC)/2 voltage
72	VCC	VCC for RF part
73	RF-	RF summing amplifier inverting input pin
74	RFO	RF summing amplifier output pin
75	IRF	The input pin for AGC
76	ARF	The output pin for AGC
77	RFI	The input pin for EFM comparing
78	CAGC	The capacitor connection pin for AGC
79	EI	Feedback input pin of E I/V amplifier for EF Balance control
80	GND	GND for RF part

KS9286



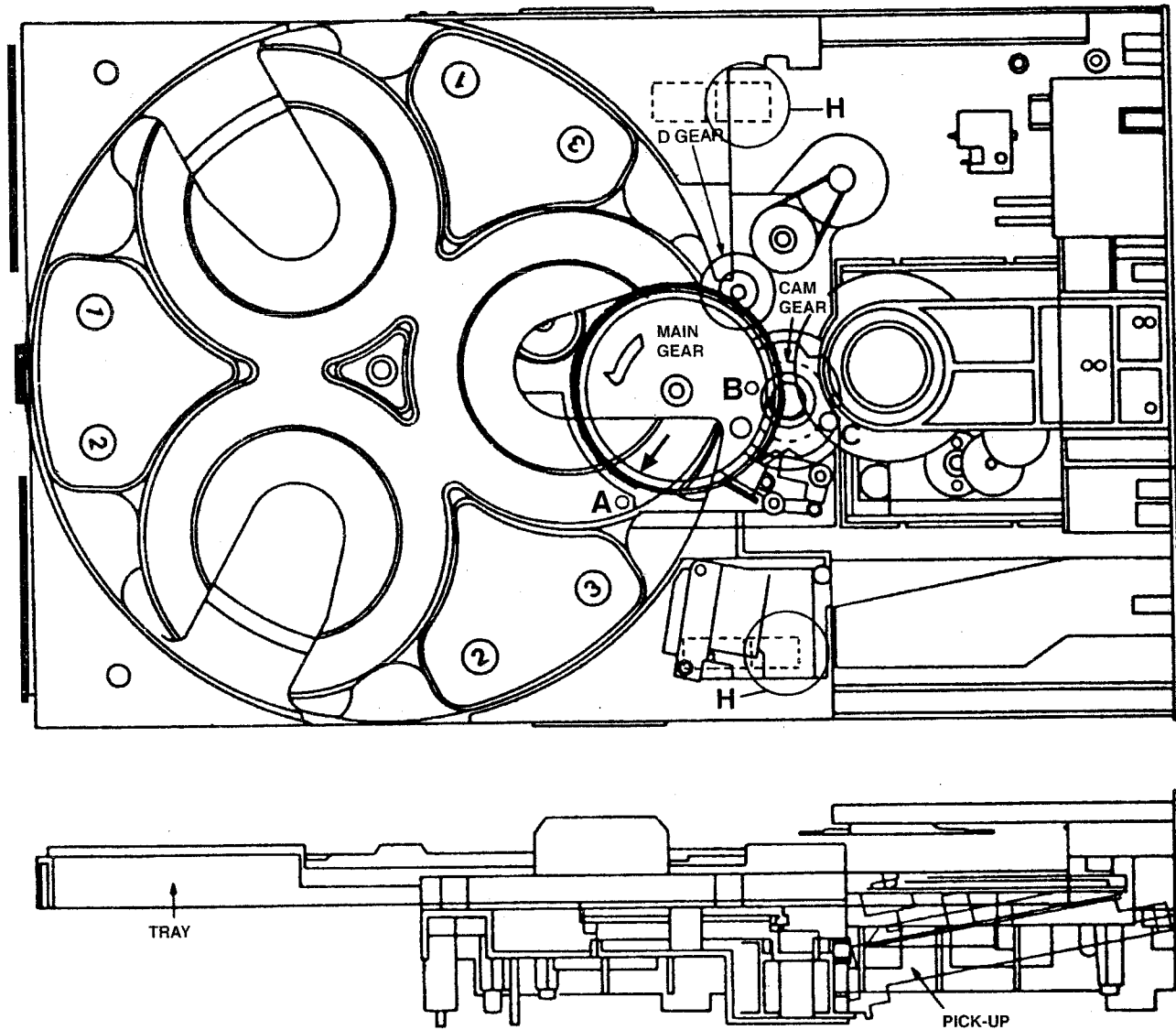
PIN DESCRIPTION

Pin No.	Symbol	IO	Description
1	AVDD1	-	Analog VCC1
2	DPDO	O	Charge pump output for Digital PLL
3	DPFIN	I	Filter input for Digital PLL
4	DPFOUT	O	Filter output for Digital PLL
5	CNTVOL	I	VCO control voltage for Digital PLL
6	AVSS1	-	Analog Ground1
7	DATX	O	Digital Audio output data
8	XIN	I	X' tal oscillator input
9	XOUT	O	X' tal oscillator output
10	WDCHO	O	Word clock output of 48bit/Slot (88.2KHz)
11	LRCHO	O	Channel clock output of 48 bit/Slot (44.1KHz), 88.2KHz when ESP ON
12	ADATAO	O	Serial audio data output of 48 bit/Slot (MSB first), double speed output when ESP ON
13	DVSS1	-	Digital Ground1
14	BCKO	O	Audio data bit clock output of 48 bit/Slot (2.1168MHz), 4.2336MHz when ESP ON
15	C2PO	O	C2 Pointer for output audio data
16	VREFL2	I	Input terminal2 of reference voltage "L" (Floating)

Pin No.	Symbol	IO	Description
17	VREFL1	I	Input terminal1 of reference voltage "L" (GND connection)
18	AVDD2	-	Analog VCC2
19	RCHOUT	O	Right-Channel audio output through D/A converter
20	LCHOUT	O	Left-Channel audio output through D/A converter
21	AVSS2	-	Analog ground2
22	VREFH1	I	Input terminal1 of reference voltage "H" (VDD connection)
23	VREFH2	I	Input terminal2 of reference voltage "H" (Floating)
24	EMPH	O	Emphasis/Non-Emphasis output, H: Emphasis ON, L: Emphasis OFF
25	LKFS	O	The Lock Status output of frame sync
26	S0S1	O	Output of subcode sync signal (S0+S1)
27	RESET	I	System reset at "L"
28	/ESP	I	ESP function ON/OFF control ("L": ESP function ON, "H": ESP function OFF)
29	SQCK	I	Clock for output Subcode-Q data
30	SQDT	O	Serial output of Subcode-Q data
31	SQOK	O	The CRC (Cycle Redundancy Check) check result signal output of Subcode-Q
32	SBCK	I	Clock for output subcode data
33	SDAT	O	Subcode serial data output
34	DVDD1	-	Digital VDD1
35	MUTE	I	Mute control input ("H": Mute ON)
36	MLT	I	Latch Signal Input from Micom (Scmit Trigger)
37	MDAT	I	Signal data input from Micom (Scmit Trigger)
38	MCK	I	Signal clock Input from Micom (Scmit Trigger)
39	DB8	I/O	SRAM data I/O port 8 (MSB)
40	DB7	I/O	SRAM data I/O port 7
41	DB6	I/O	SRAM data I/O port 6
42	DB5	I/O	SRAM data I/O port 5
43	DB4	I/O	SRAM data I/O port 4
44	DB3	I/O	SRAM data I/O port 3
45	DB2	I/O	SRAM data I/O port 2
46	DB1	I/O	SRAM data I/O port 1 (LSB)
47	C1F1	I/O	Monitoring output for C1 error correction (RA1)
48	C1F2	I/O	Monitoring output for C1 error correction (RA2)
49	C2F1	I/O	Monitoring output for C2 error correction (RA3)
50	C2F2	I/O	Monitoring output for C2 error correction (RA4)
51	C2FL	I/O	C2 decoder flag (RA5, "H": When one processing C2 code is impossible correction status.)
52	/PBCK	I/O	Output of VCO/2 (4.3218MHz) (RA6)
53	DVSS2	I/O	Digital ground 2
54	FSDW	I/O	Window or unprotected frame sync (RA7)
55	ULKFS	I/O	Frame sync protection state (RA8)
56	/JIT	I/O	Display of either RAM overflow onncerflow for ± 4 frame jitter margin (RA9)
57	C4M	I/O	Only monitoring signal (4.2336M .. RA10)
58	C16M	I/O	16.9344MHz signal output (RA11)
59	/WE	I/O	Terminal for test
60	/CS	I/O	Terminal for test
61	XTALSEL	I	Mode Selection1 (H: 33.8688MHz, L: 16.9344MHz)
62	TEST0	I	TEST input terminal (GND connection)
63	CDROM	I	Mode Selection2 (H: CD-ROM, L: CDP)
64	SRAM	I	TEST input terminal (GND connection)
65	TEST1	I	TEST input terminal (GND connection)
66	EFMI	I	EFM signal input
67	ADATAI	I	Serial audio data input of 48 bit/Slot (MSB first)
68	/ISTAT	O	The internal status output
69	TRCNT	I	Tracking counter input signal
70	LOCK	O	Output signal of LKFS condition sampled PBFR/16 (if LKFS is "H", LOCK is "H", if LKFS is sampled "L" at least 8 times by PBFR/16, LOCK is "L".)
71	PBFR	O	Write frame clock (Lock: 7.35KHz)
72	SMEF	O	LPF time constant control of the spindle servo error signal
73	SMON	O	ON/OFF control signal for spindle servo
74	DVDD2	-	Digital VDD2
75	SM DP	O	Spindle Motor drive (Rough control in the SPEED mode, Phase control in the PHASE mode)
76	SMSD	O	Spindle Motor drive (Velocity control in the PHASE mode)
77	BCKI	I	Audio data bit clock input of 48 bit/Slot (2.1168MHz)
78	TESTV	I	TEST input terminal (GND connection)
79	DSPEED	I	TEST input terminal (VDD connection)
80	LRCHI	I	Channel clock input of 48 bit/Slot (44.1KHz)

REPAIRS REGARDING CD MECHANISM

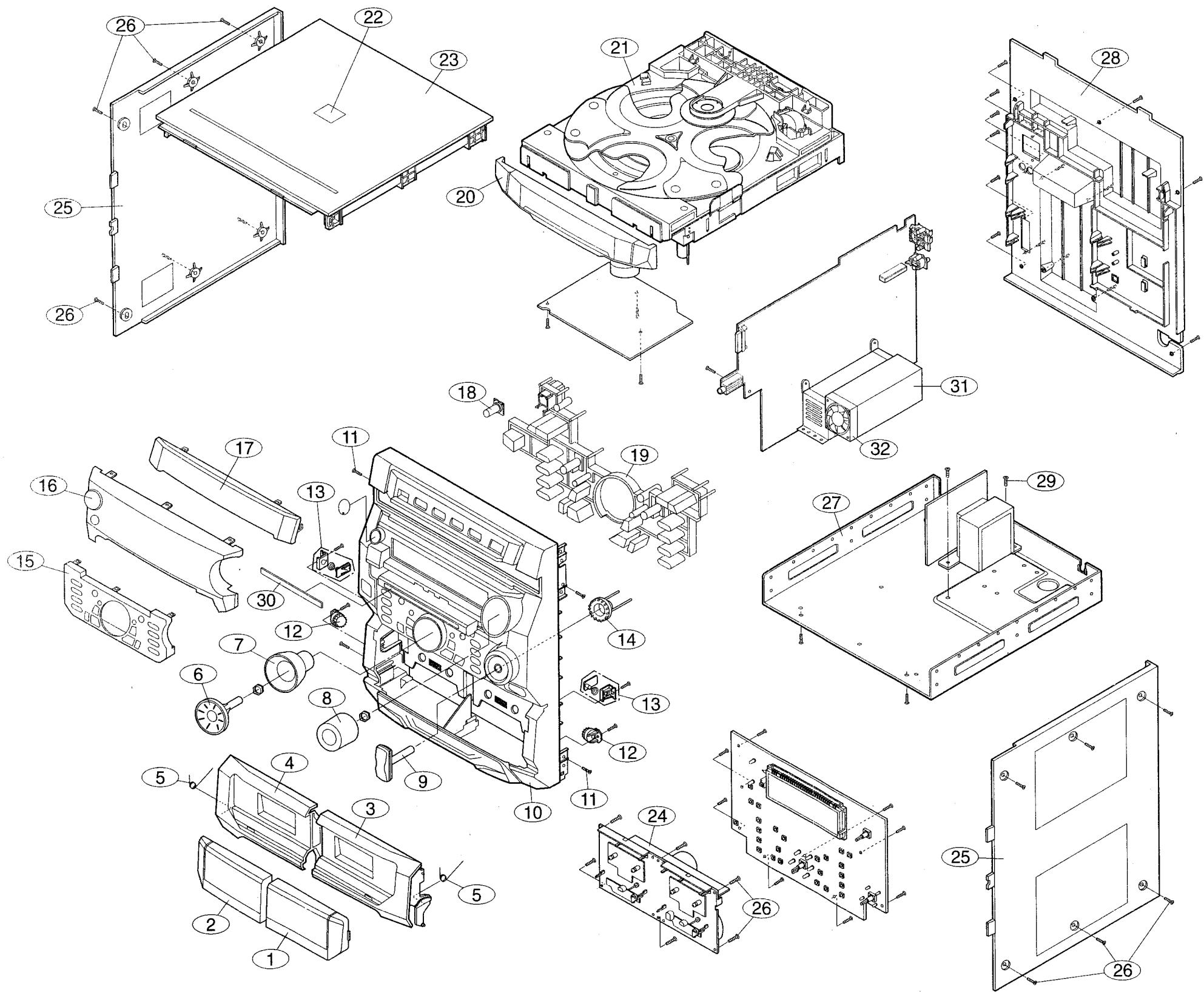
IMPROVED METHOD - WHEN THE TRAY GEARS WERE DISTORTED



1. How to open the tray.
In case of not supplying power push two hooks (H) of the base, and then open the tray.
2. How to improve the distorted gears.
 - (1) Do the hole "C" of the cam gear to face forward the pick-up so the pick-up is down like figure.
 - (2) Do the hole "B" of main gear to face forward pick-up, too.
 - (3) Set the last part of main gear to point "A".
 - (4) Push the tray to end.

EXPLODED VIEW/PARTS LIST

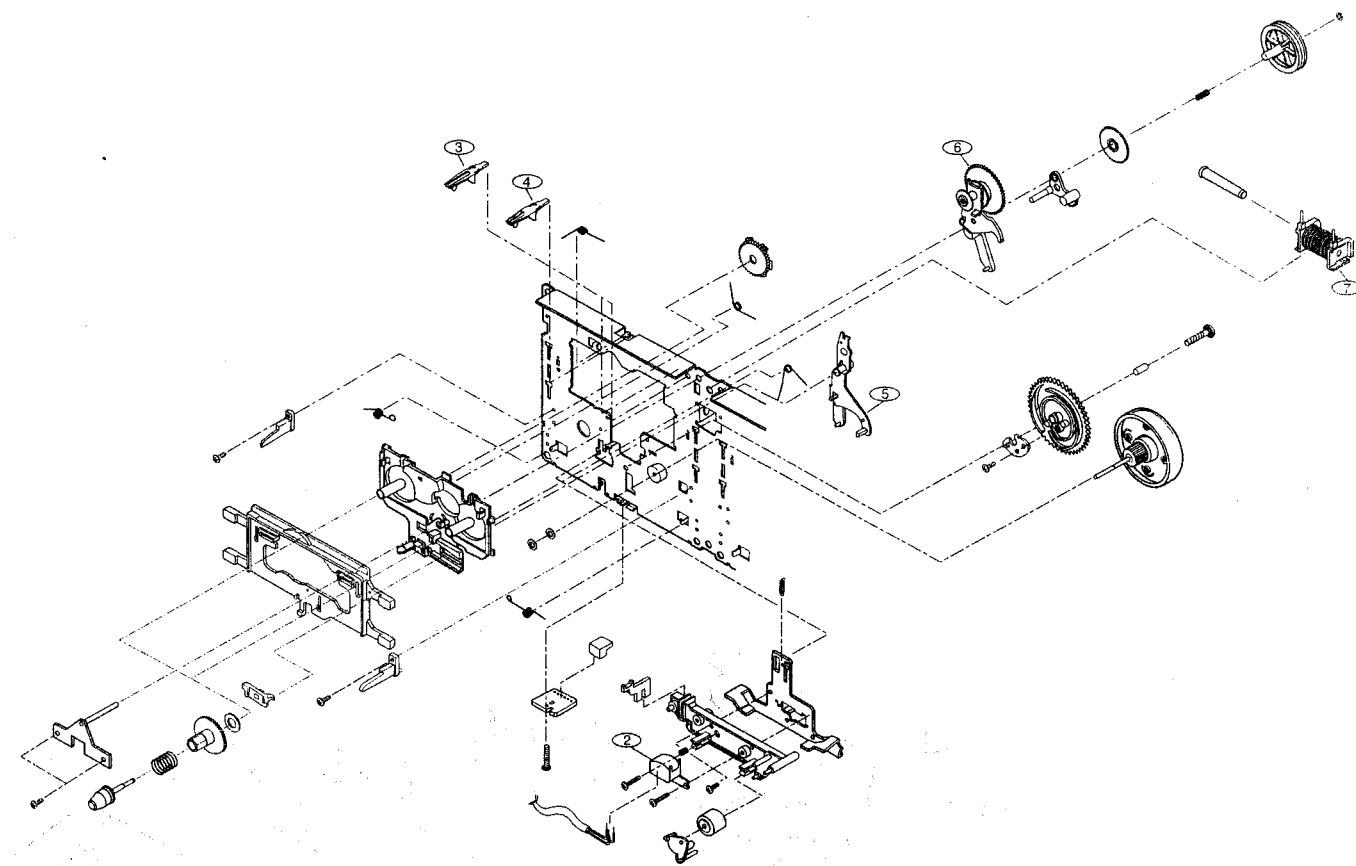
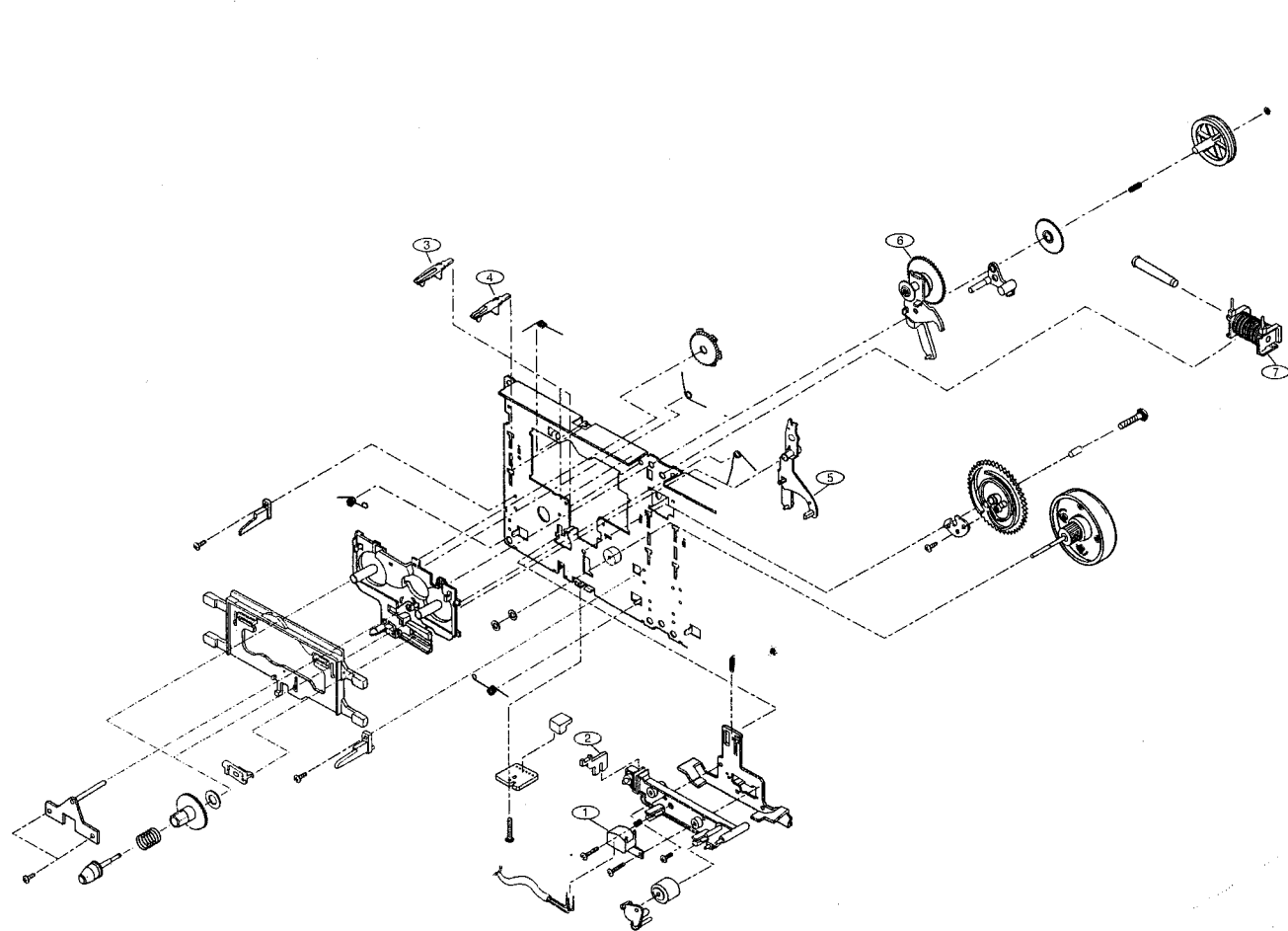
• CABINET



REF.NO.	PART NO.	DESCRIPTION
1	3790RCP006B	WINDOW CST-R
2	3790RCP005F	WINDOW CST-L
3	3580RCA003A	DOOR CST-R
4	3580RCA002A	DOOR CST-L
5	422-085E	SPRING DOOR
6	4940SC0053B	KNOB JOG
7	3680SC0004A	LENS JOG
8	4940SC0055B	KNOB VOLUME
9	4940RCV002A	KNOB ROTARY
10	3720RCF002A	PANEL FRONT
11	353-025TAAA	SCREW (3 x 10.5)
12	4901SK0001C	DAMPER ASSY
13	384-535A	GRIDE EJECT ASSY
14	3680RCA001A	LENS FUNC
15	3550RC0002H	COVER FRONT
16	3790RCP002A	WINDOW AMP
17	3790RCP003A	WINDOW CD
18	4940RCT004A	KNOB SAVING
19	4940RCT003B	KNOB MAIN
20	3580RCC001A	DOOR CD
21	4405SCE002A	CD MECHA.(CDM-H1303)
22	246-444K	DECO PLATE
23	3090S-0003F	CABINET TOP
24	6730S-G004B	DECK MECHA.(AUTO REVERSE)
25	3720S-0036D	PANEL SIDE
26	353-025C	SCREW(3 x 10)
27	3140S-P907A	CHASSIS MAIN
28	3720RCZ006C	PANEL BACK
29	1TRL0402418	SCREW
30	3806RC0001A	DECO COVER
31	4920RCE001A	HEAT SINK MAIN
32	5900R-D001A	FAN

• : Refer to the SPPL (Service Parts Price List).

• TAPE DECK MECHANISM: AUTO REVERSE DECK

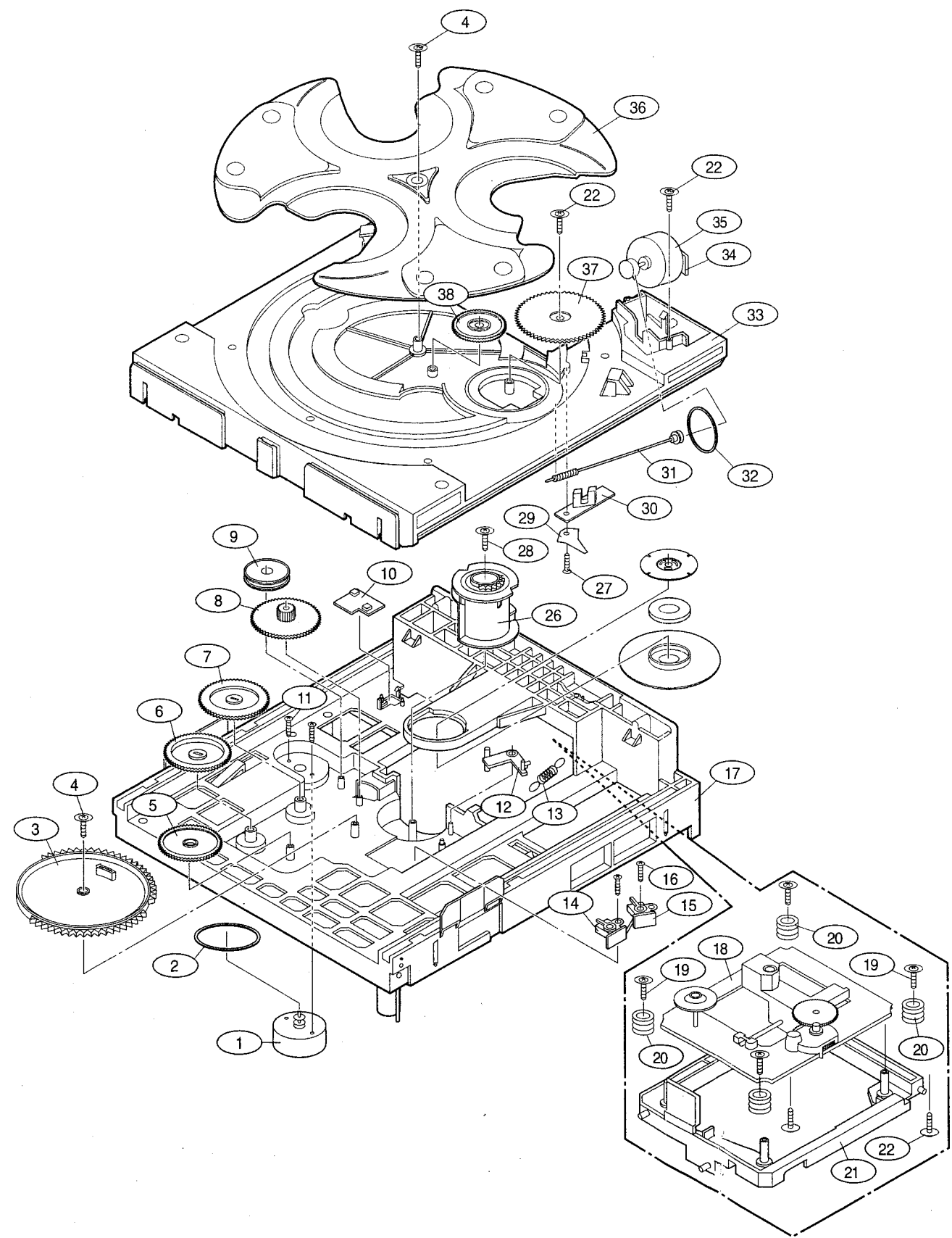


※ Serviceable Parts List

LOC.NO.	PART NO.	DESCRIPTION
1	6768S-EP01A	ASS'Y HD HOLDER
2	6768S-HP03A	PB HEAD
3	6768S-AP02C	ARM SW
4	6768S-AP02B	ARM CS
5	6768S-AP02A	ARM TRIGGER
6	6768S-GP02A	ASS'Y CLUTCH
7	6768S-VP01A	ASS'Y BOBBIN
8	6768S-OP01A	ASS'Y MOTER

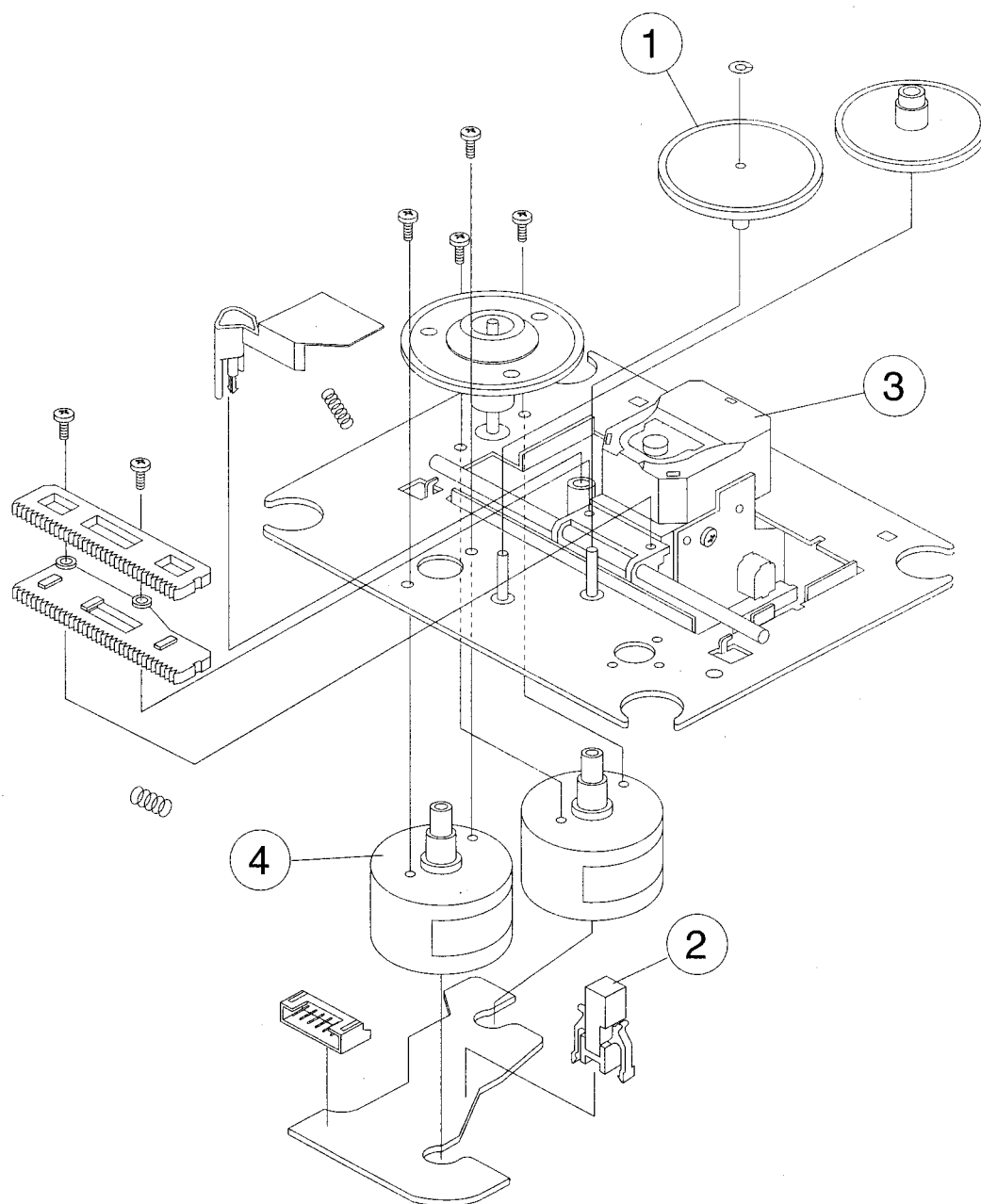
LOC.NO.	PART NO.	DESCRIPTION
9	6768S-BP04A	BELT BFR
10	6768S-BP04B	BELT AFR
11	6768S-BP04C	BELT BR
12	6768S-BP04D	BELT AF
13	6768S-TP01B	MODE SW
14	6768S-XP01B	PHOTOINTERUP TER
15	6768S-MP02A	BOX SW
16	6768S-SP02A	SPRING SW

• CD MECHANISM



REF.NO.	PART NO.	DESCRIPTION
-	4405SCE002A	CD MECHANISM ASS'Y(CDM-H1303)
1	4680SBP001A	MOTOR PULLEY ASS'Y
2	4400SB0001A	BELT MAIN
3	4470SB0005A	GEAR MAIN
4	88H-0004	SCREW(3X12X12)
5	4470SB0007A	GEAR PU UP-A
6	4470SB0008A	GEAR PU UP-B
7	4470SB0006A	GEAR PU DOWN
8	4470SB0004A	GEAR LOADING
9	4470SB0003A	GEAR PULLEY
10	6871SB21RAD	PCB ASS'Y CLOSE
11	353S353F	SCREW D2.6 L4.0
12	4974SB0001A	GUIDE CAM
13	4970SBN002A	SPRING CAM
14	6871SC21RAD	PCB ASS'Y OPEN
15	6871SD21RAD	PCB ASS'Y CAM
16	88H-0004	SCREW(3X12X12)
17	3040SB0002A	BASE MAIN
18	4405SCB001A	MECHANISM ASS'Y(KSM-213CCM)
19	6756SBX001A	SCREW(2.6X10X10)
20	4900SB0001A	DAMPER RUBBER
21	3040SB0003A	BASE PU(CDM-H1303)
22	88H-0002	SCREW(3X9X12)
23+24+25	4860SB0002A	CLAMP ASS'Y
26	4471SB0001A	GEAR CAM ASS'Y
27	353-025B	SCREW D3.0 L8.0
28	88H-0003A	SCREW(3X12X10)
29	4974SB0003A	GUIDE WORM
30	6871SF21RAD	PCB ASS'Y SENSOR
31	4371SB0002A	SHAFT ASS'Y TRAY
32	4400SB0001B	BELT TRAY
33	3390SB0001A	TRAY LOADING
34	6870SE21RAB	PCB ASS'Y TRAY
35	4680SBP002A	MOTOR ASS'Y TRAY
36	3390SB0002A	TRAY DISC
37	4470SB0010A	GEAR TRAY A
38	4470SB0011A	GEAR TRAY B

• OPTICAL PICK-UP CARRIAGE



※ Serviceable Parts List

REF.NO.	PART NO	DESCRIPTION
	4405SCB001A	MECHANISM ASSEMBLY, KSM-213CCM
1	6756S-G001A	GEAR
2	6756S-T001A	SWITCH
3	6756S-X001A	PICK-UP, KSS-213C
4	6756S-O001A	MOTOR

REPLACEMENT PARTS LIST

NOTE : ► Parts marked with “△” are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

Ref. No.	Part No.	Description
COIL		
L101	6140SCD001A	KSNT-105I KWANGSUNG IFT BULK
L106	6140SCJ004A	KSZ-73C KWANG SUNG OSC BULK FF
L107	6140SCB001D	RF,MW TUNING UNIT(634-700E) CE
L203	6140SCR001A	LKS75M00-X000291-0 KWANG SUNG
CONNECTOR		
#PB DECK	563-935E	P=2.54 GIL-G03X2 2547#28 250
#RP DECK	563-935I	P=2.54 GIL-G08/G06 2547#28 240
CN302,702	561-640J	GL200-10P-TS P=2.0 HOLDER GSC
CN305	6630S-BC044	TKC-V30X-A1 TAIKO DENKI 30PIN
CN601	561-640F	GL200-06P-TS P=2.0 HOLDER GSC
CN701	561-640L	GL200-12P-TS P=2.0 HOLDER GSC
JK401	561-100D	SP-026B PARK ELEC. SPK
PN201	561-715C	GIL-G-03P-S3T2-E LG CABLE 3PIN
PN202	561-715H	GIL-G-08P-S3T2-E LG CABLE 8PIN
PN301	561-686Q	00-8370-171-000-800 ELCO 17PIN
PN302	6630S-BC034	TKC-V30P-A1 TAIKO DENKI 30PIN
PN401	561-661B	5267-02A K-MOLEX 2PIN 2.54MM S
PN601	561-643F	52151-0610 K-MOLEX 6PIN 2.0MM
PN701	561-643L	52151-1210 K-MOLEX 12PIN 2.0MM
PN702	561-644J	52147-1010 K-MOLEX 10PIN 2.0MM
PN801	6630S-FB07P	00-6232-016-008-800 ELCO KOREA
PN802	561-711BAAA	*WAFER,G/S GIL-S-02P-S2T2-EF
PN803	561-711F	*WAFER,G/S GIL-S-06P-S2T2-EF
PN804	561-711DAAA	GIL-S-04P-S2T2-EF LG CABLE 4PI
PN805	561-711EAAA	*WAFER,G/S GIL-S-05P-S2T2-EF
PN806	561-686T	00-8370-201-000-800 ELCO KOREA
PN807	561-644J	52147-1010 K-MOLEX 10PIN 2.0MM
TM601,602	561-910C	TERMINAL SEMKO PCB-ROCKING
TP801	561-716C	GIL-G-03P-S3L2-E LG CABLE 3PIN
CRYSTAL		
X104	617T602D	HC-49/U A720005008 KONY RADIAL
X302	617-602F	SKS941215-01 CITIZEN WATCH RAD
X351	6202S-AJ02A	HC-49/U KONY RADIAL 4332000HZ
DIODE		
D105,108,109,423,745	0DR102109AA	RL102-10C TP GULF SEMICONDUCTO
D106,150,151,401,441	0DD133009AB	1SS133,T-72(52MM) TP ROHM-K
D304,308,309,311,314	0DD133009AB	1SS133,T-72(52MM) TP ROHM-K
D313,316,317	0DR102109AA	RL102-10C TP GULF SEMICONDUCTO
D315,320,321,322,323	0DD133009AB	1SS133,T-72(52MM) TP ROHM-K
D324,325,327,351	0DD133009AB	1SS133,T-72(52MM) TP ROHM-K
D443,451,778,785	0DD133009AB	1SS133,T-72(52MM) TP ROHM-K
D601,602,604,606,607	0DR102109AA	RL102-10C TP GULF SEMICONDUCTO
D603,605,609,610,614	0DD133009AB	1SS133,T-72(52MM) TP ROHM-K
D608,611	0DR102109AA	RL102-10C TP GULF SEMICONDUCTO
D612,613	0DR61000AA	KBU6G-10C BK GULF SEMICONDUCTO

D801	0DD133009AB	1SS133,T-72(52MM) TP ROHM-K
ZD302,303	0DZ680009AL	GDZJ6.8B TP GRANDE DO-34 500MW
ZD401,451	0DZ510009AH	GDZJ5.1B TP GRANDE DO-34 500MW
ZD601	0DZ330009AR	GDZJ33D TP GRANDE DO-34 500MW
ZD602	0DZ510009AH	GDZJ5.1B TP GRANDE DO-34 500MW
ZD801	0DZ390009AC	GDZJ3.9B TP GRANDE DO-34 500MW
ZD803,804	0DZ510009AH	GDZJ5.1B TP GRANDE DO-34 500MW

FILTER(CIRC)

CF101,102,103	616-010B	SFE10.7MS3GH(RD) MURATA 107000
FB201,251,401,451	631T603R	BFS2545A0F(52MM TP) SAMHWA AX

FUSE,TIME LAG & HOLDER ▲

F602,605	0FT6301B513	6.3A 250V 5.2X20 G SMK
F603,604	0FT4001B513	4000MA 250 V 5.2X20 CY/GL SEMK
FH603,604,605,606,607	586T001C	PIN CLIP TAPPING 5X20 KS
FH608,609,610	586T001C	PIN CLIP TAPPING 5X20 KS

IC

IC102	0ISA183700A	LA1837 30P DIP BK AM/FM IF MPX
IC103	0ISA721310A	LC72131D 22P DIP BK PLL FOR TU
IC201	0IRH312600A	BA3126N . BK HI VOL. HEAD
IC202	0IKE628900A	KIA6289N (=0IKE818900A)NDIP-24
IC203	0IRH209000A	BU2090F 16PIN SOP BK EXPANDER
IC301	0ISA866548S	LC866548V-5R00 QIP100E BK MICO
IC303	0IMY700000A	MSGEQ7 8P DIP BK 7 BAND GRAPHI
IC351	0ISA727230A	LC72723M 16P SOP BK RDS
IC401,702	0IKE455800A	KIA4558P 8DIP LIN OP-AMP
IC402	0ISA411230A	STK411-230 22P SDIP BK POWER A
IC601	0IKE781200R	KIA78R12PI 4P TO-220-4 ST SW R
IC602,604	0IKE780500H	KIA7805PI 5V 1A REG/VOLT,KEC
IC603	0IKE781200B	KIA7812PI 12V 1A,KEC
IC701,751	0ISG729600A	TDA7296 MULTIWATT BK 30W/CH
IC703	0ISG744000A	TDA7440D 28P SOP BK FUNCTION
IC801	0ISS922300A	KB9223 80P QFP BK CD ASP
IC802	0ISS928600B	KS9286B 80P QFP BK DSP FOR CD
IC803	0ISS925800A	KA9258D-T1 4CH DRIVER,S/S
IC804	0ISS830100B	KA8301 10PIN SIP BK CD MOTOR D
IC805	0ISS308200A	KA3082 10-SIP BK MOTOR DRIVE
RM301	0IRH693840A	RPM6938-V4 3P BK REMOCON MODUL

INDUCTOR

L102	637N009A	33MH C/CORE (=N008A)
L109	0LA1000K018	100M K 2.3X3.4 L5 TP

JACK

JK102,701	576-002I	S-436*-2P (RD/WH) PARK ELEC H
JK101	6800S-A002A	SP-031F PARK ELEC. ANT
JK702	572-559F	HTJ064-04B KUNMING 9PIN MOLD

LED

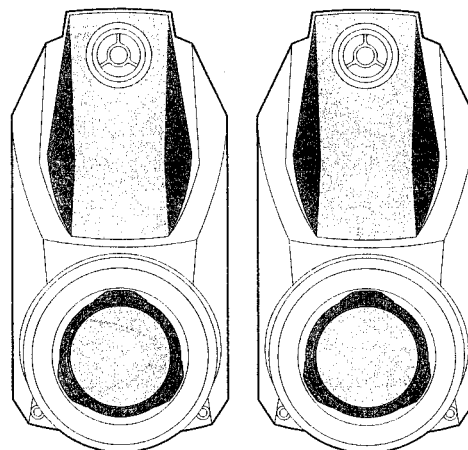
LD301,308,309,310,311	0DL307119EA	LTL-307KE-112A TP LITEON GREEN
LD302,303	0DL307119BA	LTL-307EE-112A TP LITEON RED =
LD304,305,306,307	0DL111209EA	LTL-1CHKES-UA TP LITEON GREEN
LD312,313	0DL307119EA	LTL-307KE-112A TP LITEON GREEN

RELAY

RY401	6920SC0001A	0MI-SS-212LM ORIGNAL 12V 0.044
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RY601	6920RCB101A	SDT-S-105DMR ORIGINAL 5DCV .A
RESONATOR		
X301	616-020PAAA	CSA6.00MGU MURATA 6MHZ BK
X801	616-020X	CSA16.93MX040 MURATA 16930000H
SWITCH		
SW501,502,503,504,505	6600S-TV02A	SKQN J-ALPS NON 12V 0.5A VERTI
SW506,507,508,509,510	6600S-TV02A	SKQN J-ALPS NON 12V 0.5A VERTI
SW551,552,553,554,555	6600S-TV02A	SKQN J-ALPS NON 12V 0.5A VERTI
SW556,557,558,559,560	6600S-TV02A	SKQN J-ALPS NON 12V 0.5A VERTI
SW561,562,563,564	6600S-TV02A	SKQN J-ALPS NON 12V 0.5A VERTI
TRANSFORMER,POWER Δ		
T601	6170RCM02ZD	115/230V 5/60HZ 85.8X50 DONGYA
T602	6170RCA01FS	35MM 230V,50HZ
TRANSISTOR		
Q101	0TR319209AA	KTC3192-O(KTC380TM) TP KEC TO9
Q102	0TR126709AB	KTA1267-O MINI TP KEC
Q103,115,254	0TR102009AF	KRC102M,(KRC1202) TP KEC TO92
Q107,108,202,203,206	0TR319809AB	KTC3198-TP-GR (KTC1815) KEC
Q201,208,251,701,751	0TR130209AA	KTD1302 MUTING TP KEC TO92
Q205,207,428,442	0TR320509AB	KTC3205-TP-Y (KTC2236A)KEC
Q252,253,423,424,426	0TR319809AB	KTC3198-TP-GR (KTC1815) KEC
Q301	0TR319209AA	KTC3192-O(KTC380TM) TP KEC TO9
Q302,309,310,315,325	0TR102009AF	KRC102M,(KRC1202) TP KEC TO92
Q307,308,314	0TR126609AA	KTA1266-TP-Y (KTA1015) KEC
Q311,312,316	0TR127309AA	KTA1273-TP-Y (KTA966A)KEC
Q313,352	0TR102009AE	KRA102M (KRA2202) TP KEC TO
Q320	0TR320509AB	KTC3205-TP-Y (KTC2236A)KEC
Q321	0TR130209AA	KTD1302 MUTING TP KEC TO92
Q322	0TR110009AE	KRC110M (KRC1210) TP KEC TO92
Q326,327,351	0TR102009AF	KRC102M,(KRC1202) TP KEC TO92
Q402,452	0TR320009AA	KTC3200-GR (KTC2240) TP KEC TO
Q403	0TR103009AF	KRA103M-TP (KRA2203) KEC
Q422	0TR949009AA	KTA949-Y(A1024) TP KEC TO-92L
Q427,441,773	0TR319809AB	KTC3198-TP-GR (KTC1815) KEC
Q429,770,771,775	0TR126609AA	KTA1266-TP-Y (KTA1015) KEC
Q602	0TR127309AA	KTA1273-TP-Y (KTA966A)KEC
Q612	0TR127309AA	KTA1273-TP-Y (KTA966A)KEC
Q613	0TR102009AF	KRC102M,(KRC1202) TP KEC TO92
Q745	0TR127309AA	KTA1273-TP-Y (KTA966A)KEC
Q746,772	0TR103009AE	KRC103M-TP (KRC1203) KEC
Q801	0TR126609AB	KTA1266-GR TP,KEC(KTA1015GR)
TUNER		
TUN101	6700SCF001B	KST-F404VA-2 KWANGSUNG FM 4GAN
MISCELLANEOUS		
	5010SCL001A	ANTENNA,LOOP
	3890RCA015B	BOX
	3828RCD016B	MANUAL,CHINA
	Δ 6410SCI200A	POWER CORD
	6871RF1987C	P.C. BOARD FRONT(AUDIO)
	6871RM2115C	P.C. BOARD MAIN(AUDIO)
	6871RP2116C	P.C. BOARD POWER(MULTI)
	6871S-38KAB	P.C. BOARD CD MAIN
	6710SCDC11F	REMOTE CONTROLLER

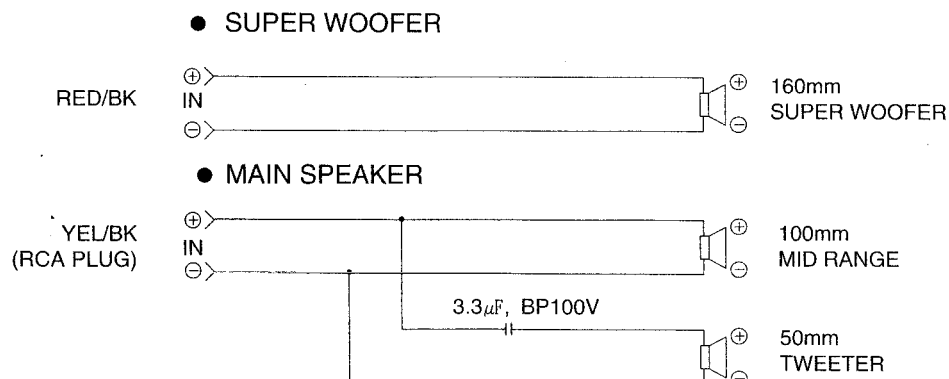
SPEAKER SYSTEM



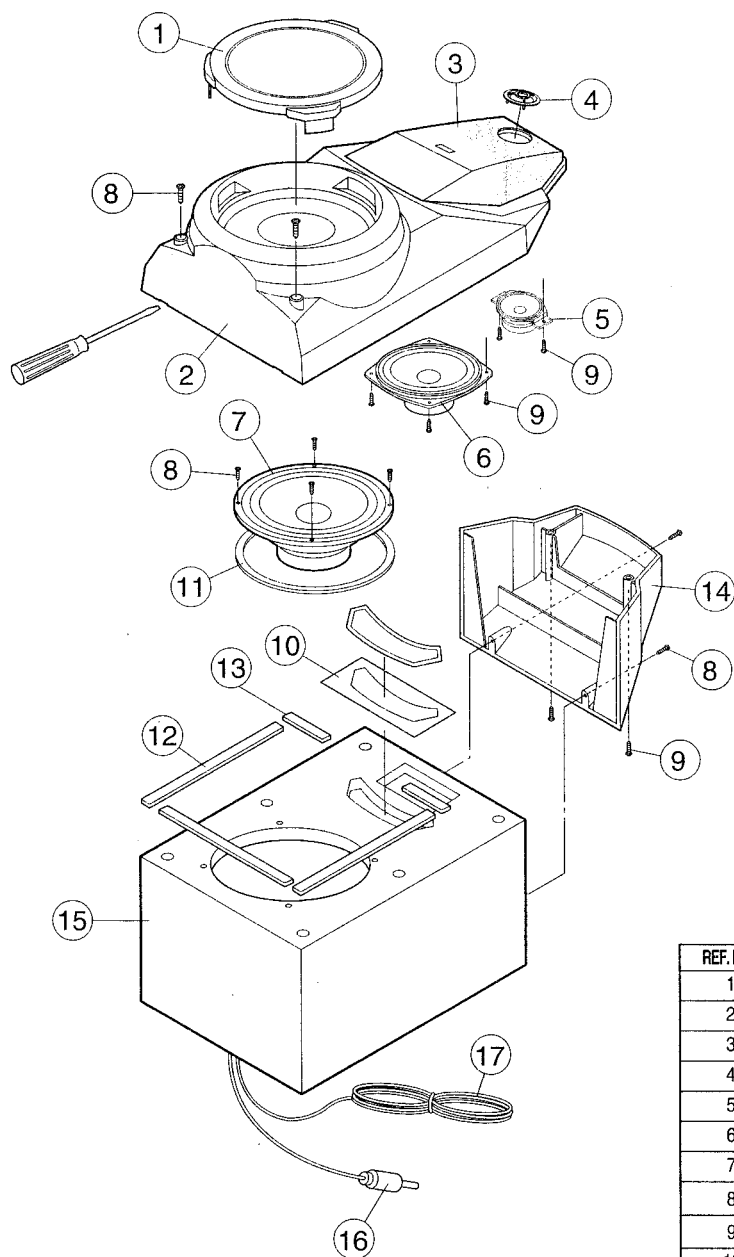
SPECIFICATION

- TYPE : BASS REFLEX 3 WAY 3 SPEAKER SYSTEM
- MAIN SPEAKER
 - SPEAKER UNIT: 100mm MID(4"), 50mm TWEETER(2")
 - FREQUENCY RANGE: 140Hz~20000Hz
 - IMPEDANCE: 6 ohm
 - S.P.L.: 90dB/W(1m)
 - RATED INPUT POWER: 30W
 - MAX. INPUT POWER: 60W
- SUPER WOOFER
 - SPEAKER UNIT: 160mm SUPER WOOFER(6 1/2")
 - IMPEDANCE: 6 ohm
 - PATED INPUT POWER: 120W
 - MAX, INPUT POWER: 240W
- DIMENSION(NET) : 240(W) × 444(H) × 322(D)mm
- WEIGHT(NET) : 5.46kg

SCHEMATIC DIAGRAM



EXPLODED VIEW/PARTS LIST



REF. NO.	PART NO.	SPECIFICATION
1	3550RM0001B	COVER SUPER WOOFER
2	3720RMF001C	PANEL FRONT
3	3530RMM001B	GRILLE METAL
4	3806RM0001A	DECO RING
5	6400RCEA01A	SPEAKER TWEETER
6	6400RCEE01A	SPEAKER MID
7	6400RCEJ01A	SPEAKER SUPER WOOFER
8	353M050C	SCREW BK 3.5 × 16 FBK
9	353M025C	SCREW TAPTITE, 3 × 10 FBK
10	4766SMN024B	FELT DUCT(BK)
11	4766SMN022B	FELT WOOFER(BK)
12	4766SMN024C	FELT BAFFLE AROUND(BK)
13	4766SMN024D	FELT DUCT L/R SIDE
14	3110RM0001A	CASE TOP
15	3091RMW003A	CABINET ASSY
16	6871RU2012A	MAIN SPEAKER CORD AY, YEL+BK, RCA
17	6871RU2012B	SUPER WOOFER CORD AY, RED+BK